

Service Manual

1.5"Electronic View Finder

AJ-VF15P/E

2"Electronic View Finder

AJ-VF20WP/E

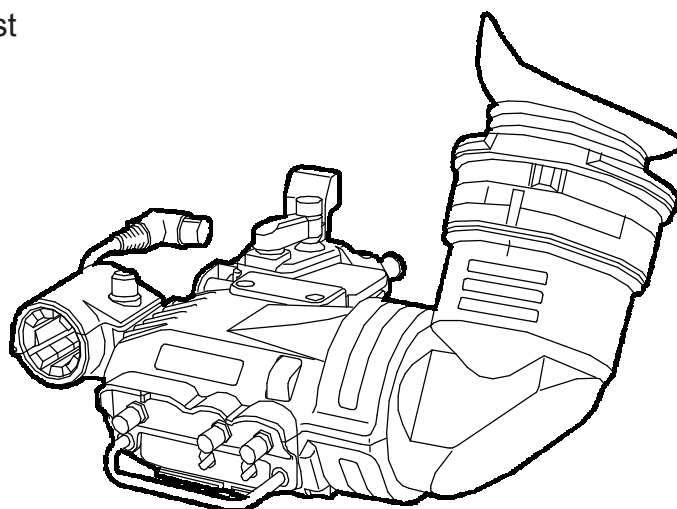
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Specifications

Power supply:	DC 12 V (supplied by camera)
Power consumption:	2.1 W (AJ-VF15P, AJ-VF15E) 2.7 W (AJ-VF20WP, AJ-VF20WE)

Picture tube:

1.5-inch high-resolution monochrome picture tube (AJ-VF15P, AJ-VF15E)
2-inch high-resolution monochrome picture tube (AJ-VF20WP, AJ-VF20WE)

Horizontal resolution:

600 lines (center, typical, 4 : 3 mode)

Image system:

525 lines, 60 fields (AJ-VF15P, AJ-VF20WP)
625 lines, 50 fields (AJ-VF15E, AJ-VF20WE)

External adjustment controls:

Controls (BRIGHT, CONTRAST, PEAKING)
Switches (TALLY HIGH/OFF/LOW, ZEBRA ON/OFF)

Operating temperature range:

32°F to 104°F (0°C to 40°C)

Operating humidity range:

85% or less (no condensation)

External dimensions (W×H×D):

9 1/2"×3 3/16"×8 1/8" (240×80×206 mm)

Weight:

2.09 lb (950 g)

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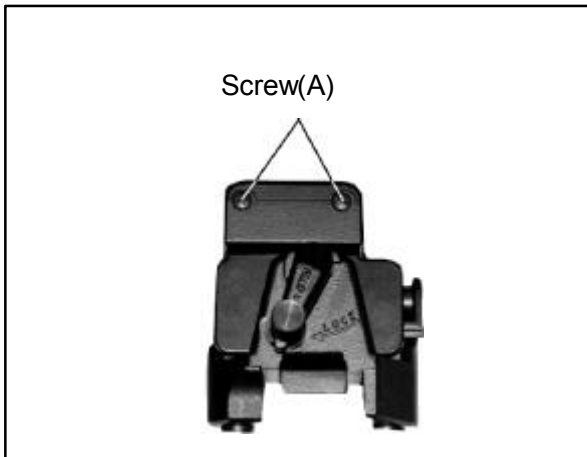
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Disassemble procedures

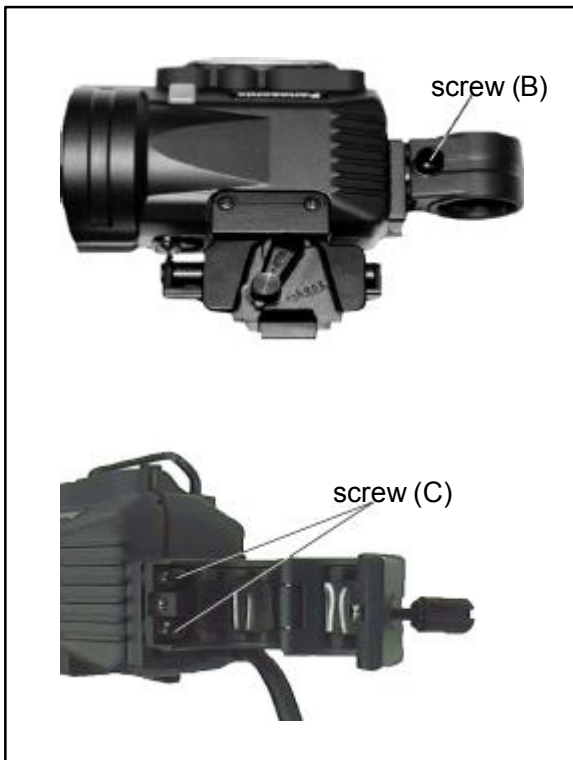
1. Mounting Unit Removal

Unscrew 2 screws (A) so that the mounting plate can be removed.



2. Microphone Holder Removal

1. Unscrew 1 screw (B) so that the microphone holder can be opened as shown figure below.
2. Unscrew 2 screws (C) so that the microphone holder can be removed.



3. Eye Piece Rubber Removal



1. Carefully tear off the portions of the Eye piece.

Note: When assembling the eye piece unit, align the markers as shown in the figure above.

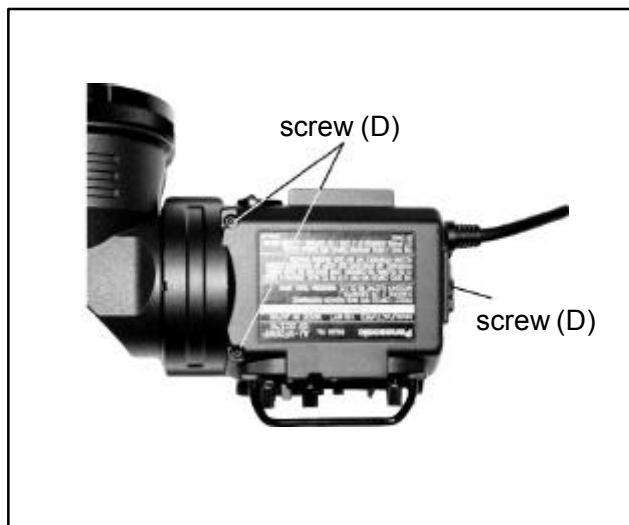
4. Eye Piece Unit Removal

1. Rotate the rock rings fully CW direction so that the eye piece unit can be pulled out.



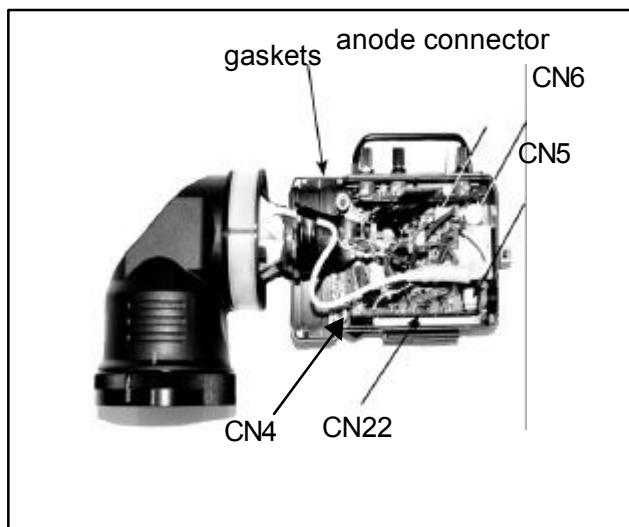
5. Upper Case Removal

1. Unscrew 3 screws (D) so that the upper case can be removed.



6. Bottom Case Removal

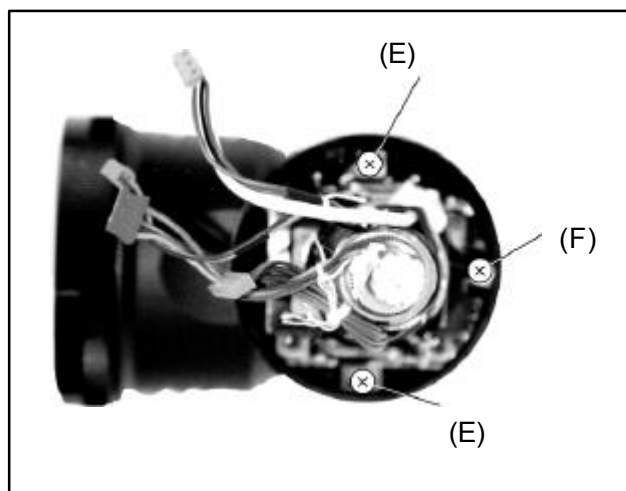
CN22(on Sub 1 P.C.Board)CN4(on Main P.C.Board) CN5 (on Main P.C.Board) CN6 (on Main P.C.Board) And disconnect the CRT anode connector so That the bottom case can be removed.



Casualy disconnect the following connectors.
Note: When assembling the case, make sure that the gaskets are not degraded.

7. CRT Unit Removal

1. Unscrew 2 screws (E) and 1 screw (F).
2. Slowly and carefully pullout the CRT unit.



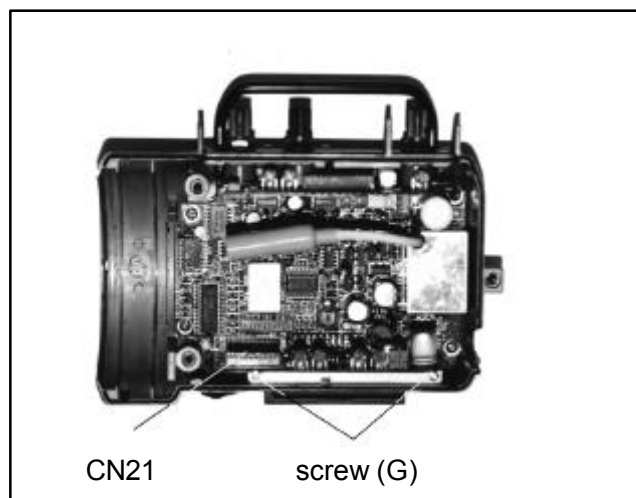
Caution : 1) Do not wipe the surface of the mirror because the special corting has been made on the surface of the mirror. When cleaning the mirror, please use lens blower.



Caution : 2) When assembling the case, make sure that the gasket is not degraded.

8. Sub 1 P.C.Board Removal

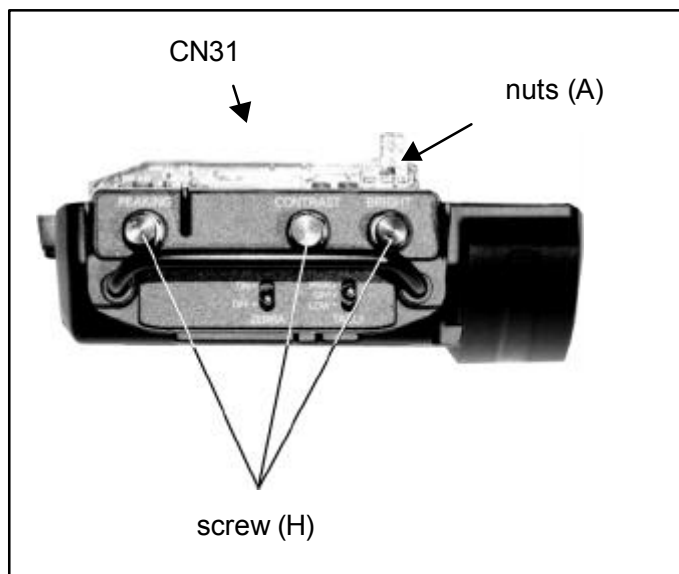
Casually disconnect connector CN21 and unscrew 2 screws (G) so that the Sub 1 P.C.Board can be removed.



9. Sub 2 P.C.Board Removal

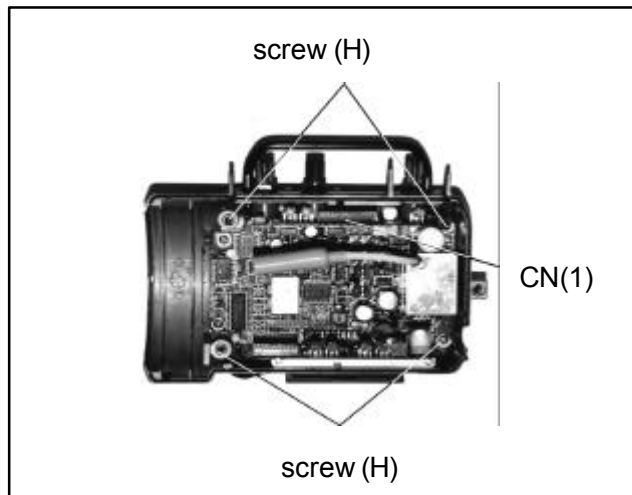
1. Cheerfully disconnect connector CN31.
2. Loosen 3 hex screws on the VR knob and pull out the 3 VR knob.
3. Unscrew 3 nuts (A) so that the sub 2 P.C.Board can be removed.

Note :Do not lose the switch gasket. When assembling the case, make sure that the switch gasket is not degraded.



10. MAIN P.C.Board Removal

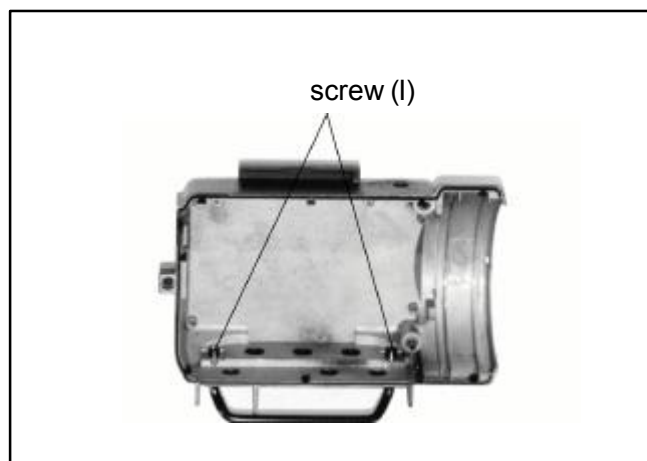
1. Carefully disconnect connectors (CN1) so that the EVF Cable can be removed.
2. Unscrew 4 screws (H) so that the Main P.C.Board can be removed.



Casually disconnect the following connectors.
Note: When assembling the case, make sure that the gaskets are not degraded.

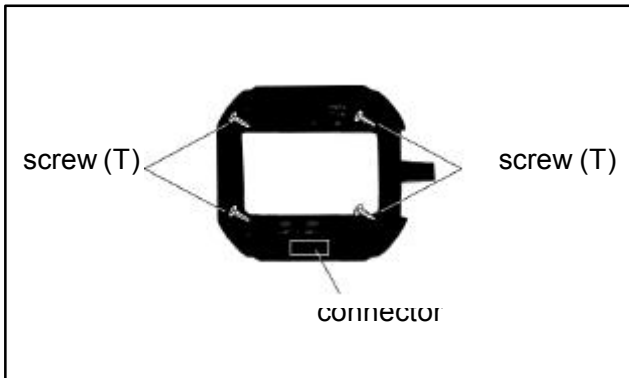
11. Guard Bar Removal

1. Unscrew 2 screws so that the guard bar can be removed.

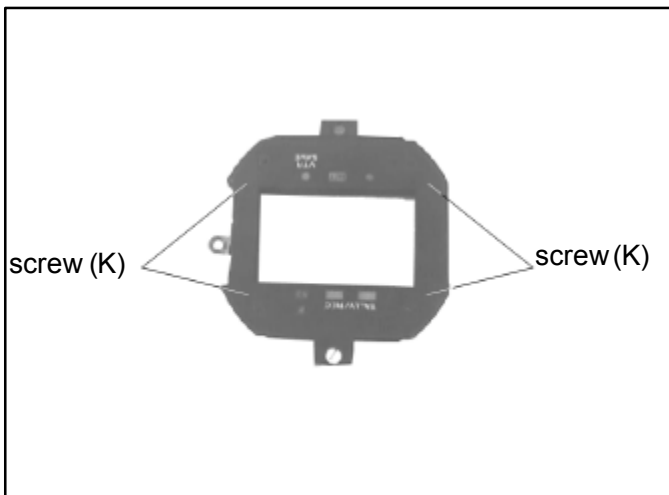


12. LED P.C.Board Removal

1. Carefully disconnect connectors (A) and unscrew 4 screws (J) so that the CRT unit can be removed.

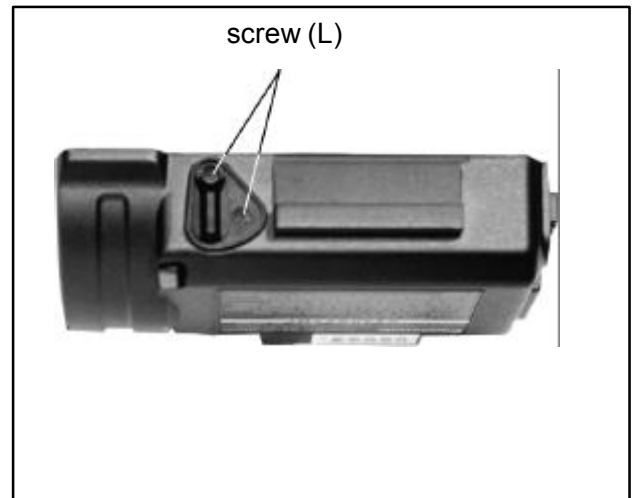


1. Unscrew 4 screws (K) so that the LED P.C.Board can be removed.



13. Back Tally Base Removal

Unscrew 2 screws (L) so that the Back Tally Base can be removed.



SECTION 3

ELECTRICALADJUSTMENT PROCEDURES

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1. Preparation

1-1 Measuring Equipment and Special Tools.

No	Item	Recommend Stuff	Note
1	Digital Volt Meter		
2	Frequency Counter		
3	Registration Chart	VFK0673	
4	High voltage prove		Use For High Voltage measurement
5	Screwdriver(for adjustment).Hex Wrench		The screwdriver use the made by resin

The camera recorder becomes necessary separately for the all-kind control such as the aspect changing to the others.

1-2 Adjustment preparation

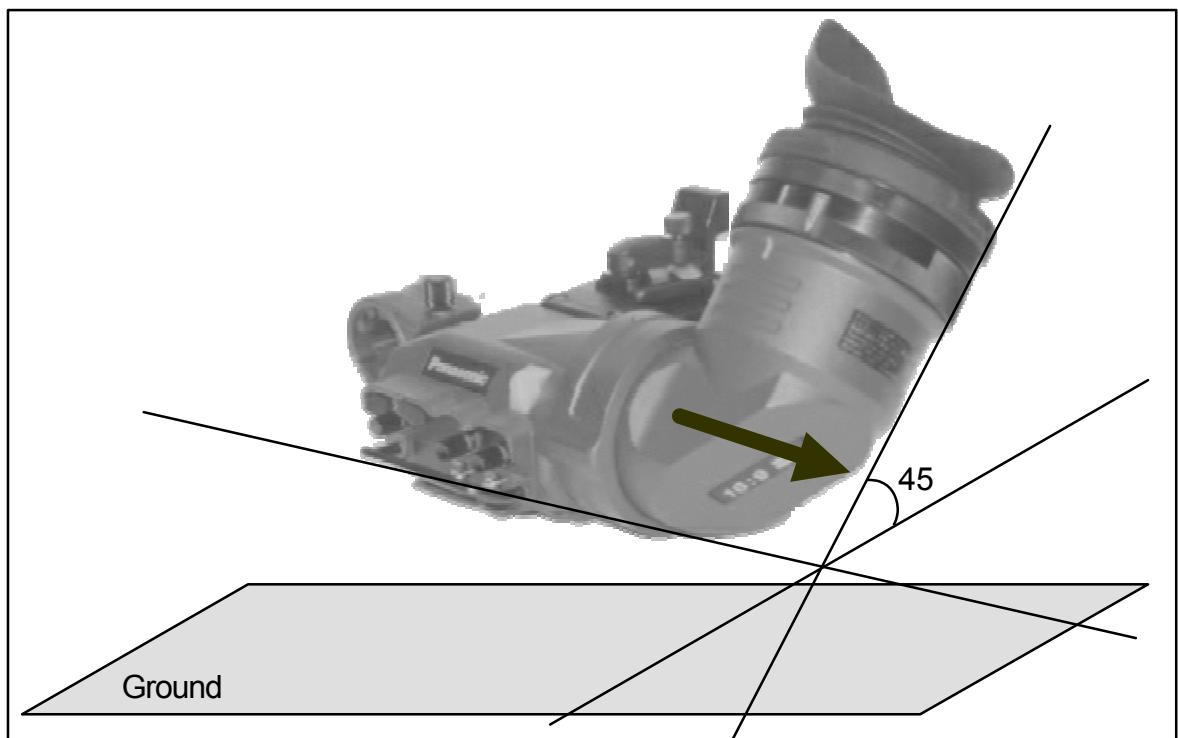
Execute an adjustment under the following environment to attempt various adjustment precision improvement.

(1)Horizontally set the viewfinder unit and Aim the CRT face side as follows.

A) Northern Hemisphere ----- North Direction

B) Southern Hemisphere ----- South Direction

(2) Adjust the angle of the eye piece by 45 as shown below.



2. Electrical Adjustment Procedure (AJ-VF15)

2-1. Power voltage Adjustment

BOARD	MAIN BOARD
SPEC	9.5V +/- 0.1V
TEST	TP2 (CN3 Connector 1pin)
ADJUST	RV1 [V0-ADJ]
M.EQ	Digital Volt Meter

1. Adjust **RV1** so that the Voltage at **TP2** is 9.5V+/-0.1V.

2-2. V Free Run Adjustment

BOARD	MAIN BOARD / SUB1 BOARD
SPEC	48Hz+/- 0.5Hz (NTSC) 38Hz+/- 0.5Hz (PAL)
TEST	TP12 (CN2 Connector 4pin) /MAIN BOARD
ADJUST	RV2 [V-HOLD] / SUB1 BOARD
M.EQ	Frequency Counter

1. Adjust **RV2** so that the frequency at **TP12** is 48Hz+/- 0.5Hz (NTSC) / 38Hz+/- 0.5Hz (PAL)

2-3. H Free Run Adjustment

BOARD	MAIN BOARD / SUB1 BOARD
SPEC	15.73+/-0.05kHz (NTSC) 15.63+/-0.05kHz (PAL)
TEST	TP9 (CN2 Connector 1pin) /MAIN BOARD
ADJUST	RV1 [H-HOLD] /SUB1 BOARD
M.EQ	Frequency Counter

1. Adjust **RV1** so that the frequency at **TP9** is 48Hz+/- 0.5Hz (NTSC) / 38Hz+/-0.5Hz (PAL).

2-4. Focus Adjustment

BOARD	MAIN BOARD
SPEC	5.8kV +/- 0.1kV
TEST	High Voltage Connector (FBT Side)
ADJUST	RV5 [FOCUS]
M.EQ	Digital Volt meter [Use High voltage prove]

1. Set the **CONTRAST VR**, **BRIGHT VR** to the center and

PEAKING VR to the minimum position.

2. Connect the high voltage voltmeter with the high voltage prove to the connector between the FBT and anode cap.
3. Adjust **RV5** so that the High Voltage is within specification.

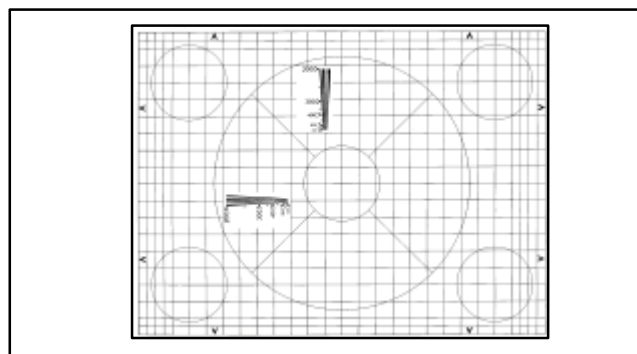


Fig.1 Registration Chart

2-5. Screen size Adjustment

BOARD	MAIN BOARD / SUB1 BOARD
TEST	EVF Picture
ADJUST	RV3 [H-SIZE (WIDE)] / MAIN BOARD RV3 [V-SIZE] / SUB1 BOARD RV5 [V-SIZE (WIDE)] / SUB1 BOARD

Adjustment for 4 : 3 mode

1. Open the on-screen menu on the camera recorder in the 3:4 mode so that the EVF screen is 4:3.
2. Adjust **RV3** (On SUB1 BOARD) so that the V-BLK as is within 1.5point scale shown in figure 2.
3. Adjust the **RV3** (On MAIN BOARD) so that the circle of chart is most round.

Note : This adjustment should be performed after completion the Size Adjustment in the 4:3 mode.

Adjustment for 16:9 mode

1. Open the on-screen menu on the camera recorder in the 16:9 mode so that the EVF screen is 16:9.
2. Adjust **RV5** (On SUB1 BOARD) so that the circle of chart is most round.

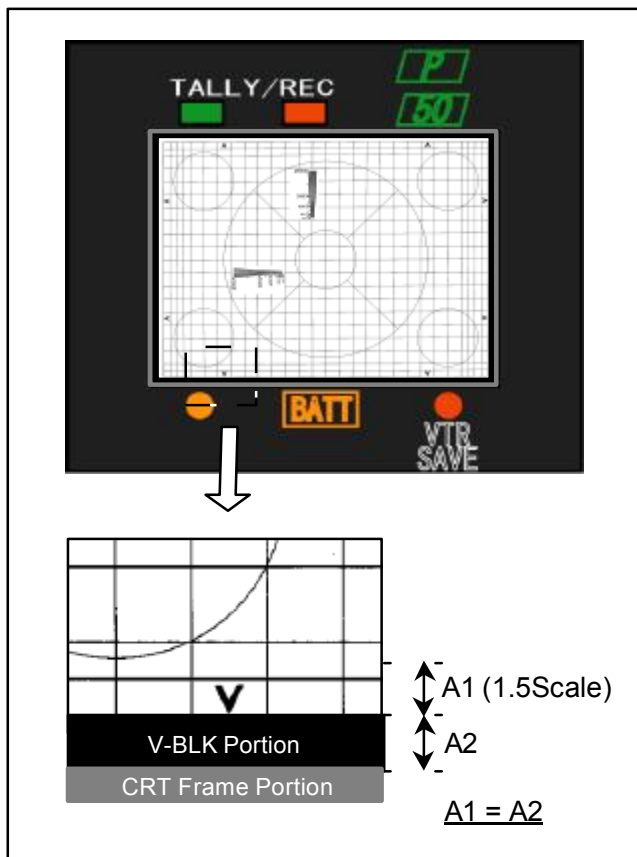


Fig.2 Screen size Adjustment

2-6. Brightness Adjustment

BOARD	SUB2 BOARD
SPEC	Pedestal Portion is Just Dark
TEST	EVF Picture
ADJUST	RV4 [SUB BRIGHT]
SIGNAL	Color Bar from Camera Recorder

Adjustment for 4:3 mode

1. Open the on-screen menu on the camera recorder in the 3:4 mode so that the EVF screen is 4:3.
2. Set the camera recorder in the color bar output mode.
3. Set the **BRIGHT VR**, **CONTRAST VR** to the center position and **PEAKING VR** to the minimum position.
4. Adjust **RV4** at the point where the brightness of the pedestal portion changes from bright to just dark. (Figure.3)

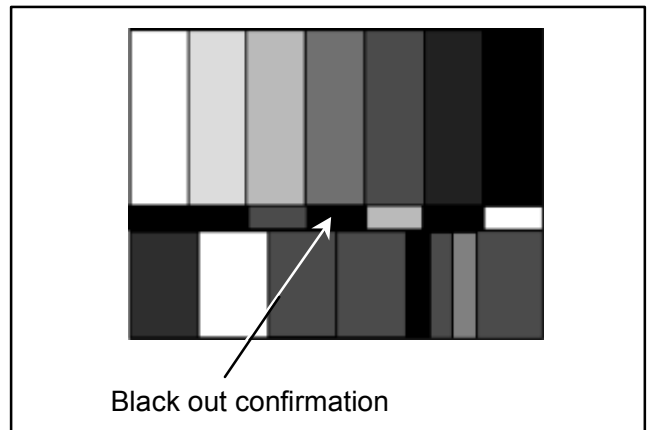


Fig.3 Brightness Adjustment

2-7. High voltage regulator Adjustment

BOARD	MAIN BOARD
SPEC	6.0V+/-0.1V
TEST	TP11 (IC9 7pin)
ADJUST	RV6 [OPAMP-ADJ]
M.EQ	Digital Volt meter

1. Set the **BRIGHT VR**, **CONTRAST VR** and **PEAKING VR** to the minimum position.
2. Adjust **RV6** so that the voltage is 6.0V+/-0.1V.

2-8. Heater voltage Adjustment

BOARD	MAIN BOARD
SPEC	635mV+/-15mV (DC)
TEST	TP5 – TP6 (CN5 connector 3pin-4pin)
ADJUST	RV7 [VH-ADJ]
M.EQ	Digital Volt meter

1. Adjust **RV7** so that the heater voltage is 635mV+/-15mV (DC).

2-9. Peaking Balance Adjustment

BOARD	MAIN BOARD / SUB2 BOARD
SPEC	3.9v+/-0.1v Peaking A = Peaking B
TEST	Pin 16 of CN1 and EVF Picture
ADJUST	RV2 [PEAK-OFFSET]
M.EQ	Digital Volt Meter

1. Set the **BRIGHT VR** to the minimum position, **CON-TRAST VR** to the center position and **PEAKING VR** to the maximum position.
2. Open the on-screen menu on the camera recorder in the 3:4 mode so that the EVF screen is 4:3.
3. Aim the camera recorder to the registration chart, and adjust the zoom and focus so that the full-size and best focus registration chart is displayed on the screen of the EVF.
4. Adjust **RV2** so that the both peaking width "A" and "B" are equal. (Figure.4)

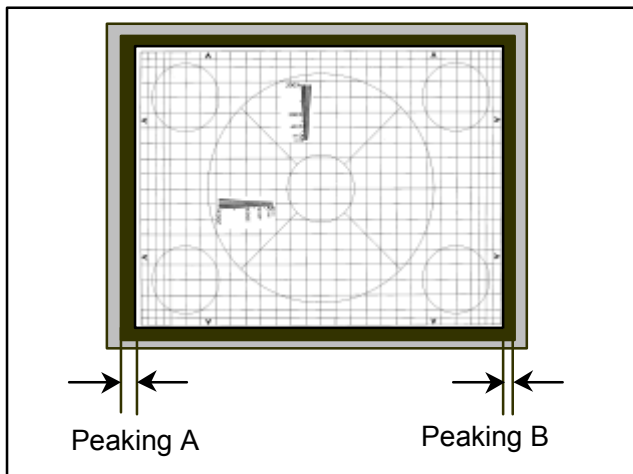


Fig.4 Peaking Balance adjustment

3. Electrical Adjustment Procedures (AJ-VF20W)

3-1. Power voltage Adjustment

BOARD	MAIN BOARD
SPEC	9.5v+/-0.1v
TEST	TP2 (Pin 1 of CN3)
ADJUST	RV1 [V0-ADJ]
M.EQ	Digital Volt Meter

1. Adjust **RV1** so that the voltage is within the specification.

3-2. V. Hold Adjustment

BOARD	MAIN BOARD / SUB1 BOARD
SPEC	48+/-0.5Hz (NTSC) 38+/-0.5Hz (PAL)
TEST	TP12 (Pin 4 of CN2)/ MAIN BOARD
ADJUST	RV2 [V-HOLD] / SUB1 BOARD
M.EQ	Frequency Counter

1. Adjust **RV2** so that the frequency is within the specification.

3-3. H. Hold Adjustment

BOARD	MAIN BOARD / SUB1 BOARD
SPEC	15.73+/-0.05kHz (NTSC) 15.63+/-0.05kHz (PAL)
TEST	TP9 (Pin 1 of CN2)/MAIN BOARD
ADJUST	RV1 [H-HOLD]/SUB1 BOARD
M.EQ	Frequency Counter

1. Adjust **RV1** so that the frequency is within the specification.

3-4. Focus Adjustment

BOARD	MAIN BOARD
SPEC	6.0kv+/-0.1kv
TEST	Connector between FBT/ Anode Cap
ADJUST	RV5 [FOCUS]
M.EQ	High Voltage Meter with High Voltage Probe

1. Aim the camera recorder to the registration chart and adjust the zoom and focus so that the full-size and best focus registration picture is displayed on the screen of EVF.
2. Connect a high volt meter with high voltage prove to the connector the anode cap and FBT.
3. Adjust **RV5** so that the high voltage is within the specification.

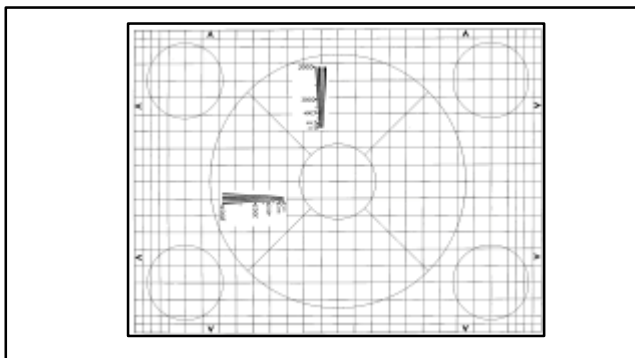


Fig.5 Registration Chart

3-5. Screen Size Adjustment¹ (4:3Mode)

BOARD	MAIN BOARD / SUB1 BOARD
TEST	EVF Screen
ADJUST	RV4 [H-SIZE(HLC)] / MAIN BOARD RV3 [V-SIZE] / SUB1 BOARD

1. Open the on-screen menu on the camera recorder in the 16:9 mode so that the EVF screen is 16:9.
2. Aim the camera recorder to the registration chart and adjust the zoom and focus so that the full-size and best focus registration picture is displayed on the screen of EVF.
3. Adjust **RV3** (On SUB1 BOARD) so that the width of V portion "A1" is 1.5 scale as shown in figure 6.
4. Adjust **RV4** (On Main BOARD) so that the circles at the 4 corners are most round.

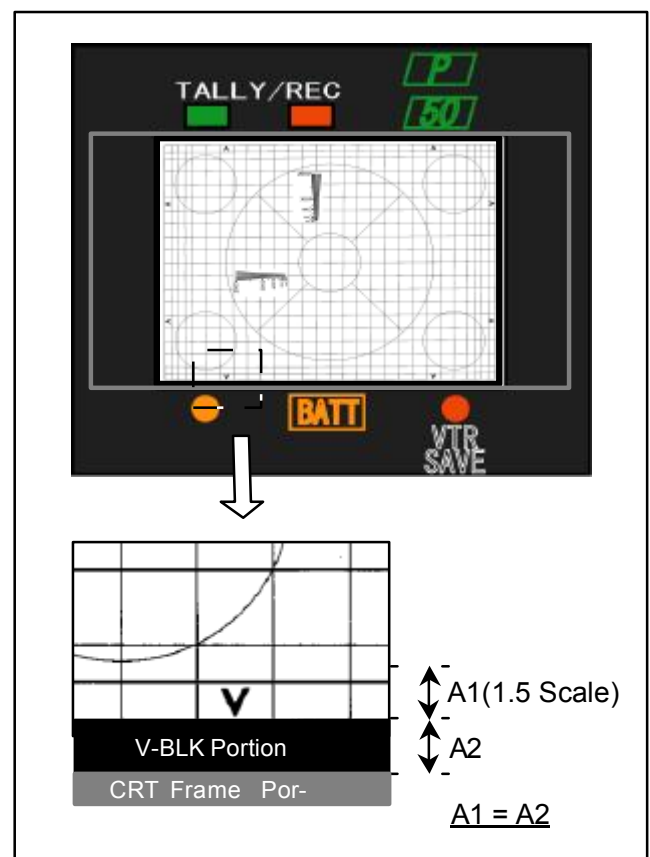


Fig.6 Screen Size Adjustment

3-5. Screen Size Adjustment 2 (16:9 Mode)

BOARD	MAIN BOARD
TEST	EVF Screen
ADJUST	RV3 [H-SIZE (WIDE)] RV8 [H-LIN]
M.EQ	Digital Volt Meter

1. Open the on-screen menu on the camera recorder in the 3:4 mode so that the EVF screen is 16:9.
2. Adjust **RV3** and **RV8** so that the width of H blanking at the both side is 1.5 scale as shown figure 6.
3. Adjust the centering magnet so that the picture is positioned in the escutcheon shown in figure 6.

3-6. Brightness Adjustment 1 (4:3 Mode)

BOARD	SUB2 BOARD
SPEC	Pedestal Portion is Just Dark
TEST	EVF Screen
ADJUST	RV4 [SUB BRIGHT]
SIGNAL	Color Bar Signal from Camera Recorder

1. Open the on-screen menu on the camera recorder in the 3:4 mode so that the EVF screen is 4:3.
2. Turn "On" the color bare mode in the camera recorder as shown in figure 7.
3. Set the **BRIGHT VR** and **CONTRAST VR** at the center position, and **PEAKING VR** at the minimum position.
4. Adjust **RV4** at the position just the illumination of the pedestal changes from just slightly light to dark.

3-6. Brightness Adjustment 2

(16:9 Mode)

BOARD	SUB2 BOARD
SPEC	Pedestal Portion is Just Dark
TEST	EVF Screen
ADJUST	RV6 [SUB BRIGHT (WIDE)]
SIGNAL	Color Bar Signal from Camera Recorder

1. Open the on-screen menu on the camera recorder in the 16: 9 mode so that the EVF screen is 16: 9 too.
2. Turn "On" the color bare mode in the camera recorder.
3. Set the **BRIGHT VR** and **CONTRAST VR** at the center and **PEAKING VR** at the minimum position.
4. Adjust **RV4** at the position just the illumination of the pedestal changes from just slightly light to dark.

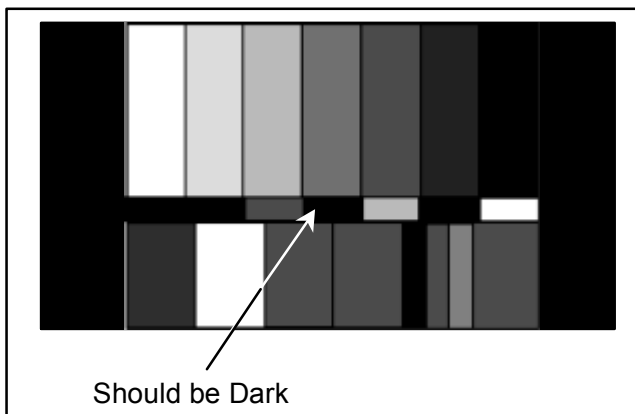


Fig.7 Brightness Adjustment

3-7. High Voltage Regulator Adjustment

BOARD	MAIN BOARD
SPEC	6.0v+/-0.1v
TEST	TP11 (Pin 7 of IC9)
ADJUST	RV6 [OPAMP-ADJ]
M.EQ	Digital Voltmeter

1. Set the **BRIGHT VR**, **CONTRAST VR** and **PEAKING VR** at the minimum position.
2. Open the on-screen menu on the camera recorder in the 16:9 mode so that the EVF screen is 16:9 too.
3. Connect the digital voltmeter to **TP11**.
4. Adjust **RV6** so that the voltage is 6.0V +/- 0.1V.

3-8. Heater Voltage Adjustment

BOARD	MAIN BOARD
SPEC	635mV+/-15mV (DC)
TEST	TP5 (Hot) & TP6 GND (Pins 3 & 4 CN5)
ADJUST	RV7 [VH-ADJ]
M.EQ	Digital Voltmeter

1. Connect the voltmeter to **TP5** (Hot) and **TP6** (GND).
2. Adjust **RV7** so that the voltage is 635mV+/-15mV.

3-9. Peaking Balance Adjustment

BOARD	MAIN BOARD / SUB2 BOARD
SPEC	3.9V+/-0.1V Peaking A = Peaking B
TEST	Pin 16 of CN1 / EVF Screen
ADJUST	RV2 [PEAK-OFFSET]
M.EQ	Digital Voltmeter

1. Set the **BRIGHT VR** and **CONTRAST VR** at the center, **PEAKING VR** at maximum position.
2. Aim the camera recorder to the registration chart and adjust the zoom and focus so that the full size of the chart is displayed on the EVF screen.
3. Open the on-screen menu on the camera recorder in the 16:9 mode so that the EVF screen is 16: 9.
4. Adjust **RV2** so that the both peaking width "A" and "B" are equal. (Figure.8)

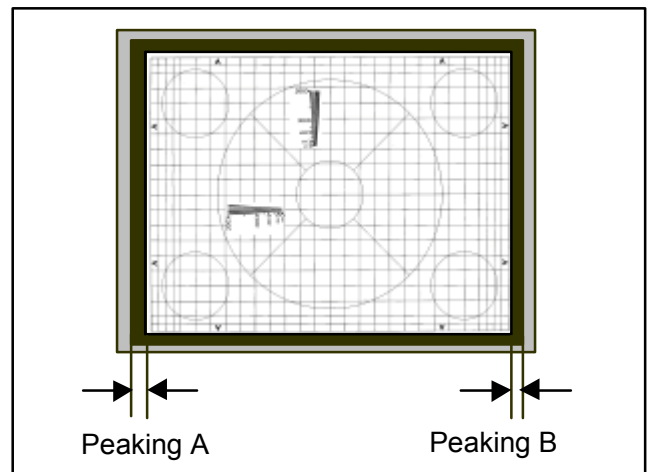


Fig.8 Peaking Balance adjustment

SECTION 4

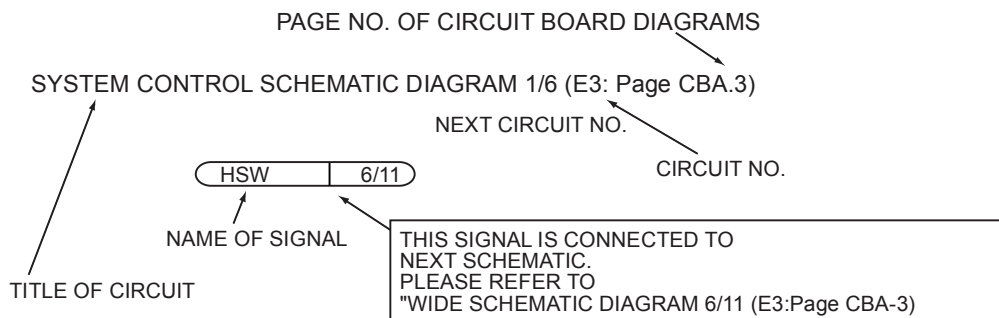
BLOCK DIAGRAMS SCHEMATIC DIAGRAMS CIRCUIT BOARD DIAGRAMS

Note:

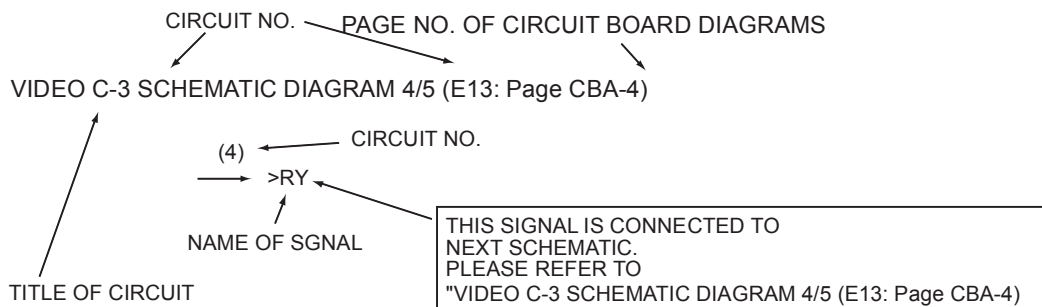
1. Do not use the part number shown on the schematic diagram or P.C.Board layout for ordering.
The correct part number for ordering is shown in the Exploded Views / Parts List section.
2. Unless otherwise specified, all resistors are in OHMS, K=1,000 OHMS, all capacitors are in MICROFARADS (uF), P=uuF.

NOTE

(EX 1)



(EX 2)



* Mark → Parts value, see table in the schematic diagram.

(EX:)

	AJ-D700	AJ-D800	
R2018	10K	10K	10K ohm
R2019	20K	*PAT	No part


CONTENTS

EVF BLOCK DIAGRAMS	- - - - -	BLK1
MAIN SCHEMATICK DIAGRAMS	- - - - -	SCM1
MAIN SUB1 SCHEMATICK DIAGRAMS	- - - - -	SCM2
MAIN SUB2 SCHEMATICK DIAGRAMS	- - - - -	SCM3
MAIN P.C.BOARD	- - - - -	PTN1
MAIN SUB1 P.C.BOARD	- - - - -	PTN1
MAIN SUB2 P.C.BOARD	- - - - -	PTN2
LED P.C.BOARD	- - - - -	PTN2

CAUTION

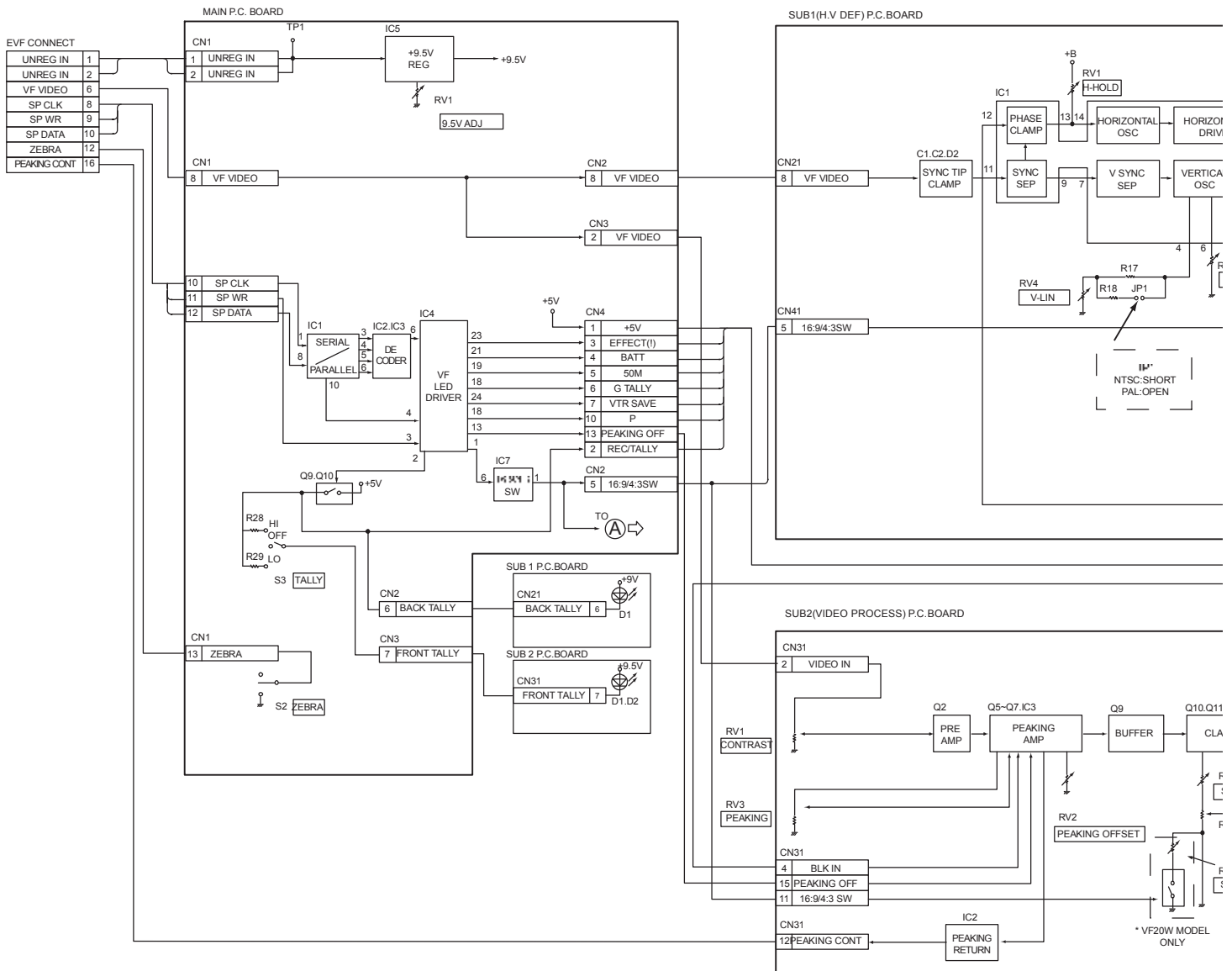
THE [] MARK INDICATES THE PRIMARY CIRCUIT TO DISTINGUISH THE PRIMARY FROM THE SECONDARY CIRCUIT. PAY ATTENTION NOT TO RECEIVE AN ELECTRIC SHOCK DURING REPAIR AND SERVICE OF THE PRODUCTS.

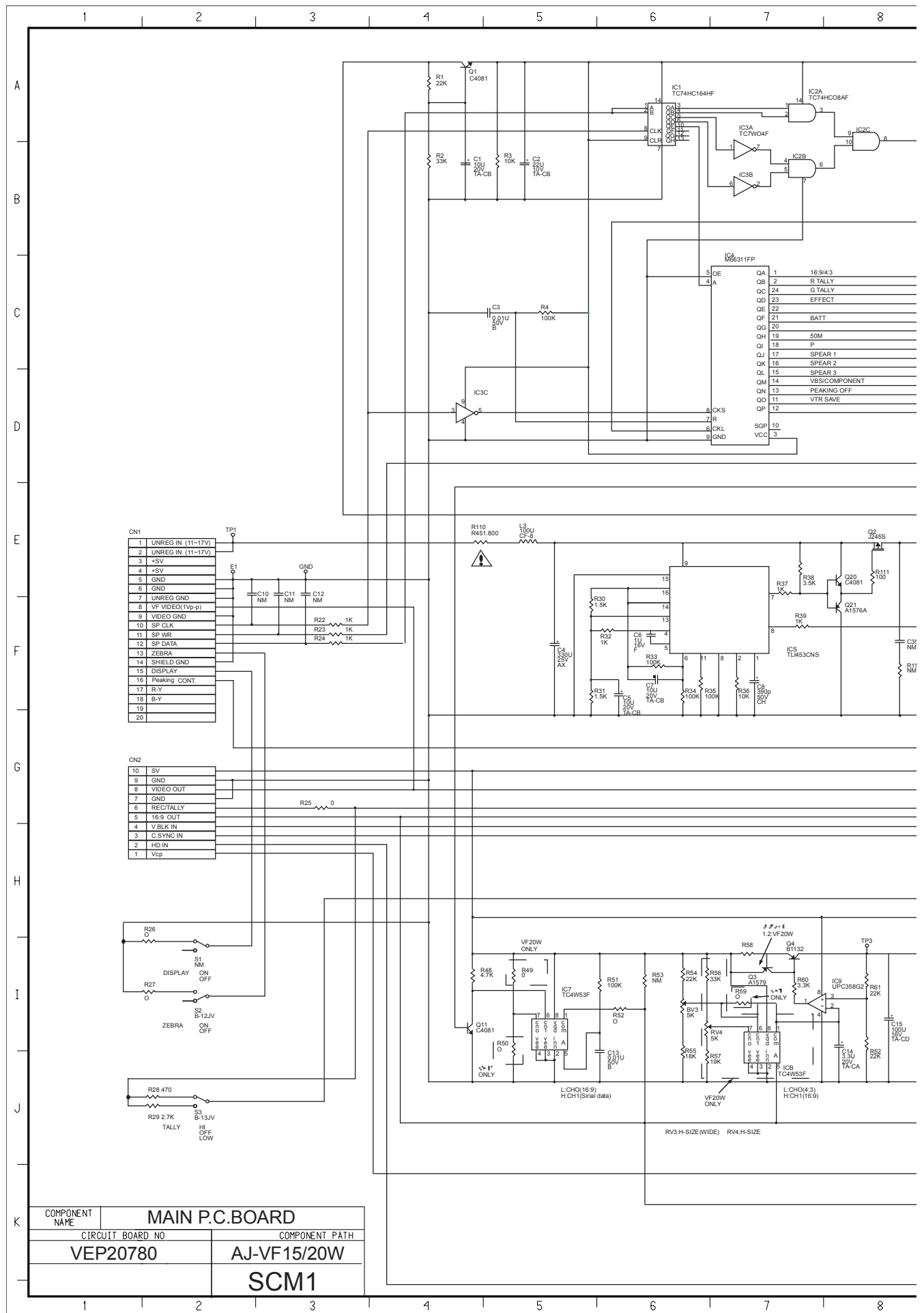
IMPORTANT SAFETY NOTICE:

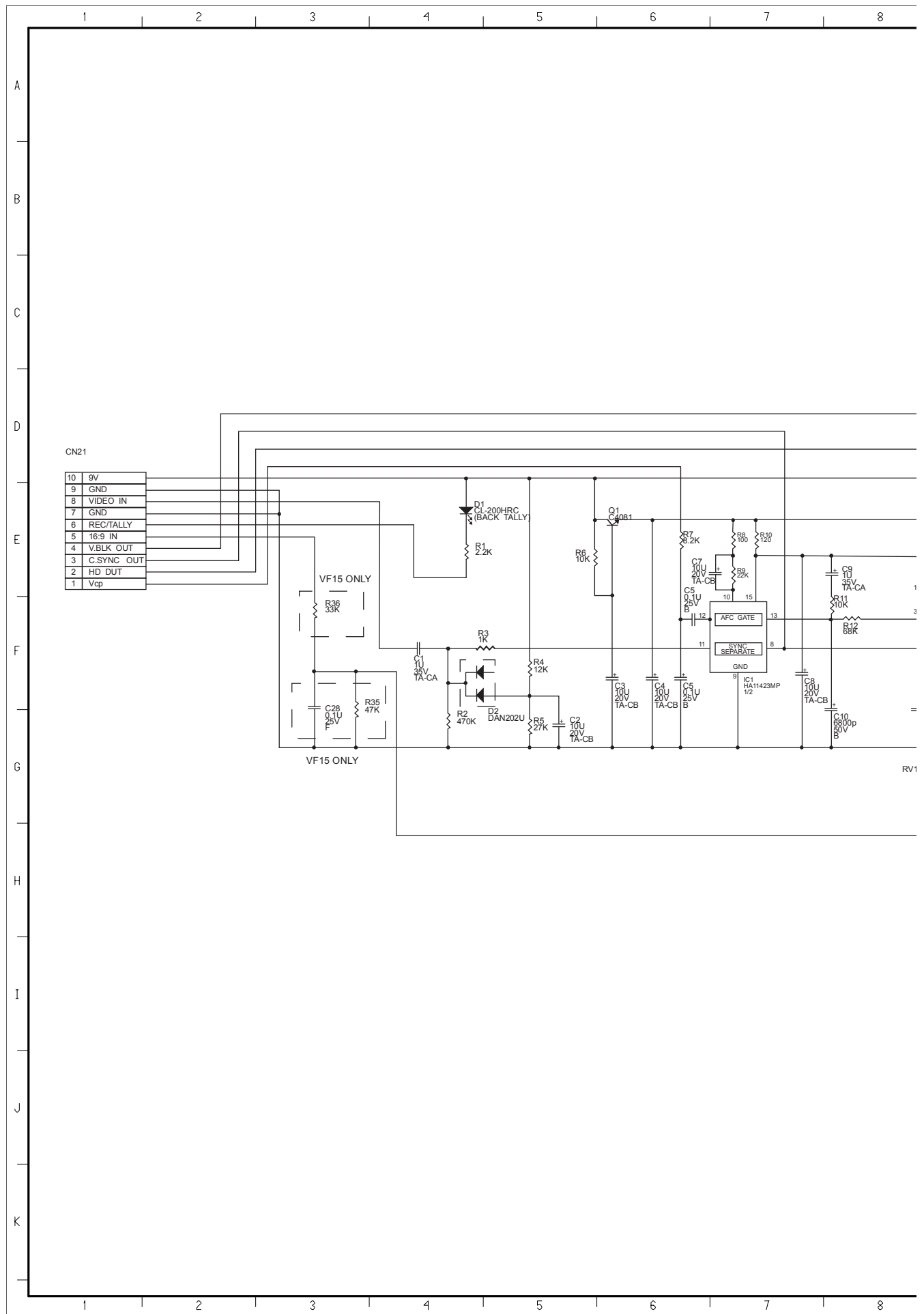
Components identified with the mark  have the special characteristics for safety.

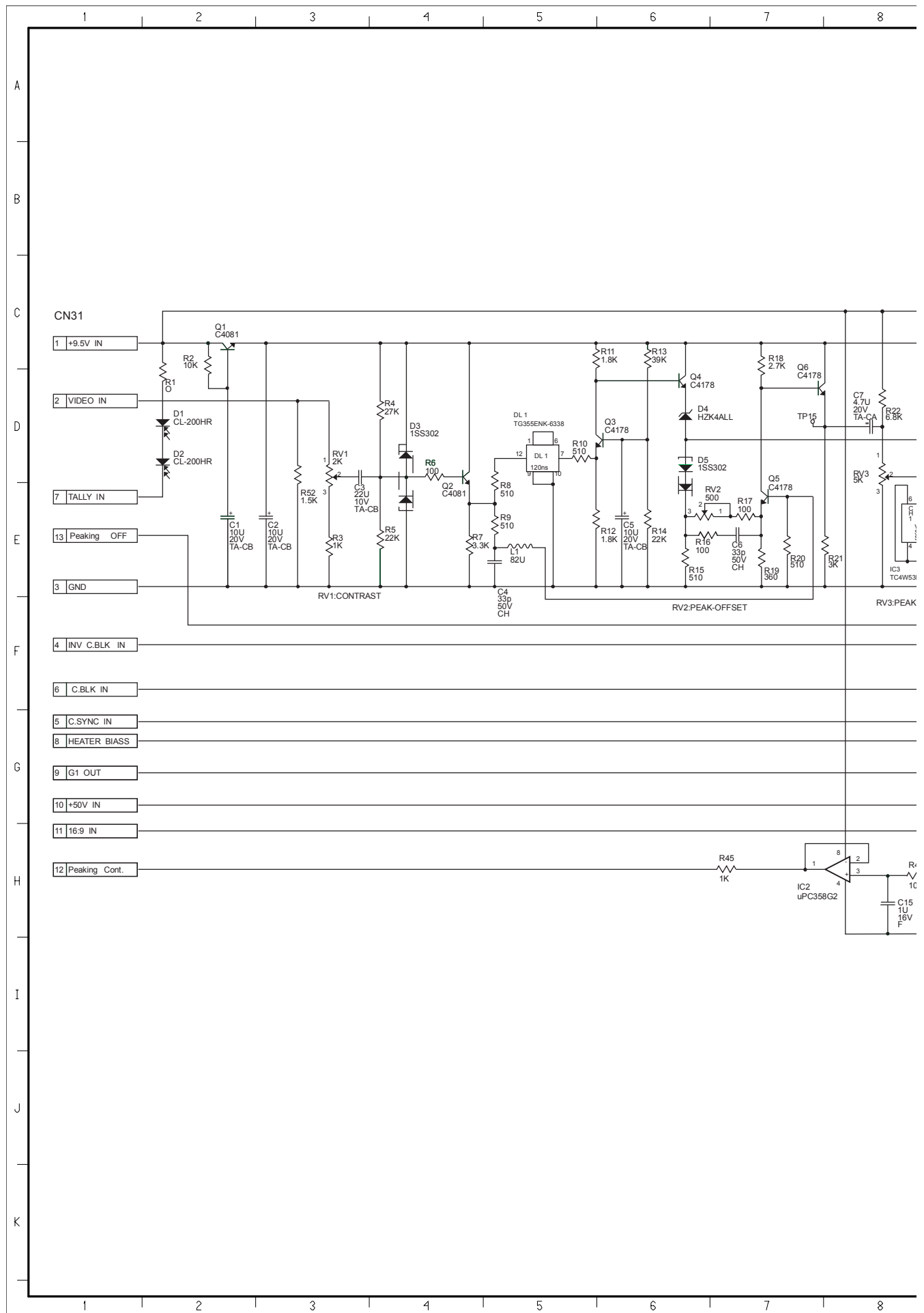
When replacing any of these components, use only the same type.

EVF BLOCK DIAGRAM









SECTION 5

EXPLODED VIEWS

&

REPLACEMENT PARTS LIST

Note:

1. *Be sure to make your orders of replacement parts according to this list.
2. Unless otherwise specified, all resistors are in OHMS, K=1,000
OHMS, all capacitors are in MICROFARADS (μ F), P=pF.
3. The P.C. Board units marked with "n" shown below the main assembled parts.
4. The parts marked with (E) on the exploded view show the electric parts.
5. **IMPORTANT SAFETY NOTICE**
Components identified with the mark <!> have the special characteristics for safety. When replacing any of these components, use only the same type.
6. The marking (RTL) indicates the retention time is limited for this item.
After the discontinuation of this assembly in production, it will no longer be available

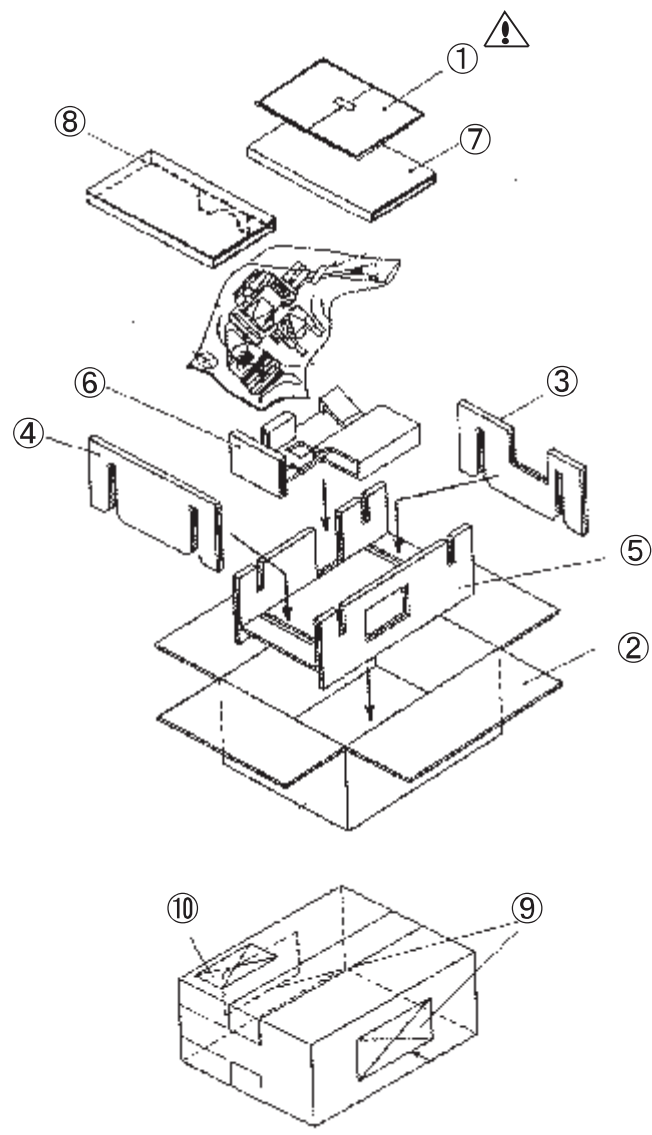
<<Abbreviations for part>>

<NAME>	<DESCRIPTIONS>
C. CAPACITOR	: CERAMIC CAPACITOR
C. CAPACITOR CH	: CERAMIC CHIP CAPACITOR
E. CAPACITOR	: ELECTROLYTIC CAPACITOR
G. CAPACITOR	: GLASS CAPACITOR
M. CAPACITOR	: MICA CAPACITOR
P. CAPACITOR	: PLASTIC FILM CAPACITOR
S. CAPACITOR	: SEMI-CONDUCTOR CAPACITOR
T. CAPACITOR	: TANTALUM CAPACITOR
TRIMMER	: TRIMMER
C. RESISTOR	: CARBON RESISTOR
F. RESISTOR	: FUSE RESISTOR
M. RESISTOR	: METAL OXIDE RESISTOR
M. RESISTOR CH	: METAL OXIDE CHIP RESISTOR
S. RESISTOR	: SOLID RESISTOR
V. RESISTOR	: VARIABLE RESISTOR
W. RESISTOR	: WIRE WOUND RESISTOR
COMBI. TR-R	: TRANSISTOR-RESISTOR COMBINATION PARTS
COMBI. R-R	: RESISTOR-RESISTOR COMBINATION PARTS
COMBI. C-R	: CAPACITOR-RESISTOR COMBINATION PARTS
COMBI. C-R-R	: CAPACITOR-RESISTOR-COIL COMBINATION PARTS
P.C. BOARD	: PRINTED CIRCUIT BOARD
W/COMPONENT	: WITHCOMPONENT

CONTENTS

Packing Parts Assembly	- - - - -	PRT1
Mechanical Parts Assembly	- - - - -	PRT2
Electrical Replacement Parts List	- - - - -	PRT4

PACKING PARTS ASSEMBLY



PACKING PARTS ASSEMBLY

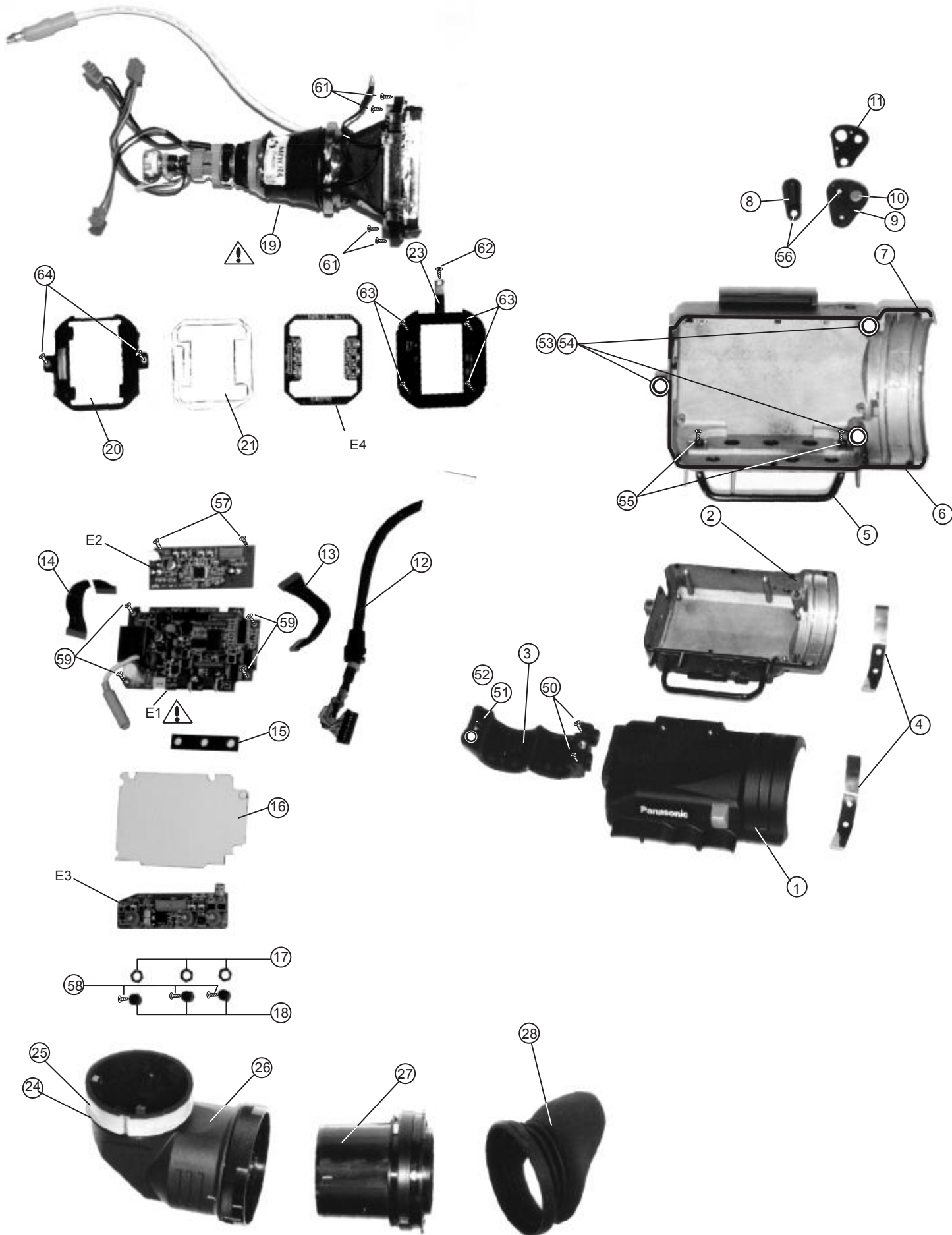
AJ-YAD230P

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks	Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
1	VQT8082	OPERATING INSTRUCTION	1						
2	VPG0A71	PACKING CASE	1						
3	VPN5247	CUSHION A	1						
4	VPN5248	CUSHION B	1						
5	VPN5249	CUSHION C	1						
6	VPN5250	CUSHION D	1						
7	VPN5251	CUSHION E	1						
8	VPN5252	CUSHION F	1						
9	VQL9822	PACKING LABEL	1						
10	VQL8185	CAUTION LABEL	1						

AJ-VF15P E/VF20WP E

[illegible]

MECHANICAL PARTS ASSEMBLY



PRT-3

AJ-VF15P/E

Ref.No.	Part No.	Part Name & Description	Qty	Remarks
• j E1	VEP20780B	MAIN P.C.BOARD	1	(RTL)AJ-VF 15P
• j E1	VEP20780D	MAIN P.C.BOARD	1	(RTL)AJ-VF 15E
• j E2	VEP20781B	SUB 1 P.C.BOARD	1	(RTL)AJ-VF 15P
• j E2	VEP20781D	SUB 1 P.C.BOARD	1	(RTL)AJ-VF 15E
• j E3	VEP20782B	SUB 2 P.C.BOARD	1	(RTL)
• j E4	VEP20783A	LED P.C.BOARD	1	(RTL)
• j E1	VEP20780B	MAIN P.C.BOARD	1	(RTL)AJ-VF 15P
	VEP20780D	MAIN P.C.BOARD	1	(RTL)AJ-VF 15E
C1	VCS1DQ106	E.CAPACITOR 20V 10M	1	
C2	VCS1AQ226	E.CAPACITOR 10V 22M	1	
C3	ECUM1H103K	C.CAPACITOR CH 50V 0.01	1	
C4	VCEV1EBL33	E.CAPACITOR CH 25V 330	1	
C5	VCS1DQ106	E.CAPACITOR 20V 10M	1	
C6	ECUM1C105Z	C.CAPACITOR CH 16V 1U	1	
C7	VCS1DQ106	E.CAPACITOR 20V 10M	1	
C8	ECUM1H391J	C.CAPACITOR CH 50V 390	1	
C9	VCEA1CBG10	E.CAPACITOR CH 16V 100	1	
C13	ECUM1H103K	C.CAPACITOR CH 50V 0.01	1	
C14	VCS1DQ335	E.CAPACITOR 20V 3.3M	1	
C15	VCS1CQ107	E.CAPACITOR 16V 100M	1	
C16	ECUM1H221J	C.CAPACITOR CH 50V 220	1	
C18	ECUM1H103K	C.CAPACITOR CH 50V 0.01	1	
C19	ECUM1H470J	C.CAPACITOR CH 50V 47P	1	
C20	ECUX1E104K	C.CAPACITOR CH 25V 0.1U	1	
C21	ECUM1H473K	C.CAPACITOR CH 50V 0.047	1	
C24	VCF01AP822	P.CAPACITOR 10V 8200P	1	
C26	ECUM1H472K	C.CAPACITOR CH 50V 4700	1	
C27	VCS1DQ475	E.CAPACITOR 20V 4.7M	1	
C28	VCK0302	C.CAPACITOR	1	
C29	VCEV1HBH4R	E.CAPACITOR CH 50V 4.7U	1	
C30	VCEA1JBK27	E.CAPACITOR CH 63V 27U	1	
C32	VCS1DQ106	E.CAPACITOR 20V 10M	1	
CN1	VJP3440A020	CONNECTOR (MALE)	1	
CN2	VJP1603T	CONNECTOR (MALE)	1	
CN3	VJP1942	CONNECTOR (MALE)	1	
CN4	VJP1603T	CONNECTOR (MALE)	1	
CN5	VJP4292	CONNECTOR (MALE)	1	
CN6	VJP1230T	CONNECTOR (MALE)	1	
CP1-P4	VJR1072	PIN	4	
D1	SC80204	DIODE	1	
D2,D3	DAP202U	DIODE	2	
D4	1SS302	DIODE	1	
D5	DAN202U-T10	DIODE	1	
D6,D7	RLS245	DIODE	2	
D8	DAN202U-T10	DIODE	1	
D9	ESJA57-04A	DIODE	1	
D10	RLS245	DIODE	1	
D13	RLS245	DIODE	1	
E1	VJR1072	PIN	1	
FBT	VLT0950	FLYBACK TRANSFORMER	1	
HLC	VLQ0889	HORIZON LINEAR COIL	1	
IC	TC74HC164AF	IC	1	
IC2	TC74HC08AF	IC	1	
IC3	TC7W04F	IC	1	
IC4	M66311FP	IC	1	

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
IC5	TL1453CNS	IC	1	
IC6	TC4S01F	IC	1	
IC7	TC4W53F	IC	1	
IC9	UPC358G2-E2	IC	1	
IC10	TC4S69F	IC	1	
IC12	LM4041E1M3	IC	1	
L1	VLQ0891	COIL	1	
L3	VLQ0891	COIL	1	
Q1	2SC4081	TRANSISTOR	1	
Q2	2SJ245S	TRANSISTOR	1	
Q3	2SA1579	TRANSISTOR	1	
Q4	2SB1132T100	TRANSISTOR	1	
Q5,Q6	2SK1254L	TRANSISTOR	2	
Q9-11	2SC4081	TRANSISTOR	3	
Q15	2SC4081	TRANSISTOR	1	
Q20	2SC4081	TRANSISTOR	1	
Q21	2SA1576A	TRANSISTOR	1	
R1	ERJ6GEYG22	M.RESISTOR CH 1/10W 22Ω	1	
R2	ERJ6GEYF33	M.RESISTOR CH 1/10W 33Ω	1	
R3	ERJ6GEYG10	M.RESISTOR CH 1/10W 10Ω	1	
R4	ERJ6GEYG10	M.RESISTOR CH 1/10W 100Ω	1	
R5	ERJ6GEYG33	M.RESISTOR CH 1/10W 3.3kΩ	1	
R6	ERJ6GEYG33	M.RESISTOR CH 1/10W 330Ω	1	
R7	ERJ6GEYG10	M.RESISTOR CH 1/10W 1kΩ	1	
R9	ERJ6GEYG33	M.RESISTOR CH 1/10W 3.3kΩ	1	
R11	ERJ6GEYG33	M.RESISTOR CH 1/10W 330Ω	1	
R17,18	ERJ6GEYG10	M.RESISTOR CH 1/10W 1kΩ	2	
R20,21	ERJ6GEYF47	M.RESISTOR CH 1/10W 4.7kΩ	2	
R22-24	ERJ6GEYG10	M.RESISTOR CH 1/10W 1kΩ	3	
R25-27	ERJ6GEY0R0	M.RESISTOR CH 1/10W 0Ω	3	
R28	ERJ6GEYJ47	M.RESISTOR CH 1/10W 470Ω	1	
R29	ERJ6GEYG27	M.RESISTOR CH 1/10W 2.7kΩ	1	
R30,31	ERJ6GEYG15	M.RESISTOR CH 1/10W 1.5kΩ	2	
R32	ERJ6GEYG10	M.RESISTOR CH 1/10W 1kΩ	1	
R33-35	ERJ6GEYG10	M.RESISTOR CH 1/10W 100Ω	3	
R36	ERJ6GEYG10	M.RESISTOR CH 1/10W 10Ω	1	
R37	ERJ6GEYG10	M.RESISTOR CH 1/10W 1kΩ	1	
R38	ERJ6GEYG36	M.RESISTOR CH 1/10W 3.6kΩ	1	
R39	ERJ6GEYG10	M.RESISTOR CH 1/10W 1kΩ	1	
R40	ERJ6GEYG13	M.RESISTOR CH 1/10W 13Ω	1	
R41	ERJ6GEYG15	M.RESISTOR CH 1/10W 1.5kΩ	1	
R42	ERJ6GEYG33	M.RESISTOR CH 1/10W 3.3kΩ	1	
R43,44	ERJ6GEYG10	M.RESISTOR CH 1/10W 10Ω	2	
R45	ERJ6GEYG56	M.RESISTOR CH 1/10W 5.6kΩ	1	
R46	ERJ6GEYG10	M.RESISTOR CH 1/10W 10Ω	1	
R48	ERJ6GEYF47	M.RESISTOR CH 1/10W 4.7kΩ	1	
R50	ERJ6GEY0R0	M.RESISTOR CH 1/10W 0Ω	1	
R51	ERJ6GEYG10	M.RESISTOR CH 1/10W 100Ω	1	
R52	ERJ6GEY0R0	M.RESISTOR CH 1/10W 0Ω	1	
R54	ERJ6GEYG22	M.RESISTOR CH 1/10W 22Ω	1	
R55	ERJ6GEYG18	M.RESISTOR CH 1/10W 18Ω	1	
R58	ERJ8GEYJ2R	M.RESISTOR CH 1/8W 2.2Ω	1	
R59	ERJ6GEY0R0	M.RESISTOR CH 1/10W 0Ω	1	
R60	ERJ6GEYG33	M.RESISTOR CH 1/10W 3.3kΩ	1	
R61,62	ERJ6GEYG22	M.RESISTOR CH 1/10W 22Ω	2	
R63	ERJ6GEYG10	M.RESISTOR CH 1/10W 10Ω	1	
R65	ERJ6GEYG10	M.RESISTOR CH 1/10W 100Ω	1	
R66	ERJ6GEYG56	M.RESISTOR CH 1/10W 5.6kΩ	1	
R67	ERJ6GEYF47	M.RESISTOR CH 1/10W 4.7kΩ	1	
R68	ERJ6GEYG10	M.RESISTOR CH 1/10W 10Ω	1	
R69	ERJ6GEYG10	M.RESISTOR CH 1/10W 1MΩ	1	
R70	ERJ6GEYG10	M.RESISTOR CH 1/10W 1kΩ	1	
R71	ERJ6GEYG10	M.RESISTOR CH 1/10W 100Ω	1	
R72-74	ERJ6GEYJ33	M.RESISTOR CH 1/10W 3.3kΩ	3	
R75	ERJ6GEYG10	M.RESISTOR CH 1/10W 100Ω	1	
R76	ERJ6GEYG22	M.RESISTOR CH 1/10W 22Ω	1	
R77	ERJ6GEYG68	M.RESISTOR CH 1/10W 68Ω	1	
R78	ERJ6GEYG10	M.RESISTOR CH 1/10W 100Ω	1	
R80	ERJ6GEYG33	M.RESISTOR CH 1/10W 3.3kΩ	1	
R81	ERJ6GEY0R0	M.RESISTOR CH 1/10W 0Ω	1	
R101	ERJ6GEY0R0	M.RESISTOR CH 1/10W 0Ω	1	
R104,05	ERJ6GEYG10	M.RESISTOR CH 1/10W 10Ω	2	

AJ-VF15P/E

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
R110	VRE0218	M.RESISTOR	1	
R111	ERJ6GEYG10	M.RESISTOR CH 1/10W 100K	1	
RV1	VRV0303B102	V.RESISTOR 1K	1	
RV3	VRV0303B502	V.RESISTOR 5K	1	
RV5	VRV0303B103	V.RESISTOR 10K	1	
RV6	VRV0303B502	V.RESISTOR 5K	1	
RV7	VRV0303B101	V.RESISTOR 100	1	
S2	VST0332	TOGGLE SWITCH	1	
S3	VST0333	TOGGLE SWITCH	1	
		MISCELLANEOUS		
	VSC4926	SHIELD CASE	1	
E2	VEP20781B	SUB 1 P.C.BOARD	1	(RTL)AJ-VF15P
	VEP20781D	SUB 1 P.C.BOARD	1	(RTL)AJ-VF15E
C1	VCS1VQ105	E.CAPACITOR 35V 1M	1	
C2-C4	VCS1DQ106	E.CAPACITOR 20V 10M	3	
C5,C6	ECUX1E104K	C.CAPACITOR CH 25V 0.1U	2	
C7,C8	VCS1DQ106	E.CAPACITOR 20V 10M	2	
C9	VCS1VQ105	E.CAPACITOR 35V 1M	1	
C10	ECUX1H682K	C.CAPACITOR CH 50V 6800	1	
C12	ECHU1C472J	P.CAPACITOR 16V 4700P	1	
C13	ECUM1E223K	C.CAPACITOR CH 25V 0.023	1	
C14,15	ECUX1E104K	C.CAPACITOR CH 25V 0.1U	2	
C16,17	VCS1VQ105	E.CAPACITOR 35V 1M	2	
C19	ECUM1H472K	C.CAPACITOR CH 50V 4700	1	
C20	VCEV1CBJ10	E.CAPACITOR 16V 100U	1	
C21	ECUM1H221J	C.CAPACITOR CH 50V 220P	1	
C22	ECUM1H153K	C.CAPACITOR CH 50V 0.015	1	
C23	VCS1DQ335	E.CAPACITOR 20V 3.3M	1	
C24	ECUX1E104K	C.CAPACITOR CH 25V 0.1U	1	
C25	VCS1DQ106	E.CAPACITOR 20V 10M	1	
C26	ECUM1H562K	C.CAPACITOR CH 50V 5600	1	
C27	VCEV1CBL47	E.CAPACITOR 16V 470U	1	
C28	ECUX1E104K	C.CAPACITOR CH 25V 0.1U	1	
CN21	VJP1614	CONNECTOR (MALE)	1	
CN22	VJP1843	CONNECTOR (MALE)	1	
CP3	VJR1072	TEST POINT	1	
D1	CL-200HRC	LED	1	
D2	DAN202U-T10	DIODE	1	
D3	1SS302	DIODE	1	
IC1	HA11423MP	IC	1	
Q1,Q2	2SC4081	TRANSISTOR	2	
Q3	IMZ1	TRANSISTOR-RESISTOR	1	
Q4	2SK664	TRANSISTOR	1	
R1	ERJ6GEYG22	M.RESISTOR CH 1/10W 2.2K	1	
R2	ERJ6GEYG47	M.RESISTOR CH 1/10W 470	1	
R3	ERJ6GEYG10	M.RESISTOR CH 1/10W 10K	1	
R4	ERJ6GEYF12	M.RESISTOR CH 1/10W 12K	1	
R5	ERJ6GEYG27	M.RESISTOR CH 1/10W 27K	1	
R6	ERJ6GEYG10	M.RESISTOR CH 1/10W 10K	1	
R7	ERJ6GEYF82	M.RESISTOR CH 1/10W 8.2K	1	
R8	ERJ6GEYG10	M.RESISTOR CH 1/10W 10K	1	
R9	ERJ6GEYG22	M.RESISTOR CH 1/10W 22K	1	
R10	ERJ6GEYG12	M.RESISTOR CH 1/10W 12K	1	
R11	ERJ6GEYG10	M.RESISTOR CH 1/10W 10K	1	
R12	ERJ6GEYG68	M.RESISTOR CH 1/10W 68K	1	
R13	ERJ6GEYF12	M.RESISTOR CH 1/10W 12K	1	
R14	ERJ6GEYF82	M.RESISTOR CH 1/10W 8.2K	1	
R15	ERJ6GEYF33	M.RESISTOR CH 1/10W 33K	1	
R16	ERJ6GEYG22	M.RESISTOR CH 1/10W 2.2K	1	

AJ-VF15P/E

[illegible]

AJ-VF15P/VF20WP

[illegible]

AJ-VF20WP/E

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks	Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
• i E1	VEP20780B	MAIN P.C.BOARD	1	(RTL)AJ-VF20WP	IC4	M66311FP	IC	1	
	VEP20780C	MAIN P.C.BOARD	1	(RTL)AJ-VF20WE	IC5	TL1453CNS	IC	1	
• i E2	VEP20781A	SUB 1 P.C.BOARD	1	(RTL)AJ-VF20WP	IC6	TC4S01F	IC	1	
	VEP20781C	SUB 1 P.C.BOARD	1	(RTL)AJ-VF20WE	IC7,C8	TC4W53F	IC	2	
• i E3	VEP20782A	SUB 2 P.C.BOARD	1	(RTL)	IC9	UPC358G2-E2	IC	1	
• i E4	VEP20783A	LED P.C.BOARD	1	(RTL)	IC10,11	TC4S69F	IC	2	
					IC12	LM4041E1M3	IC	1	
					L1	VLQ0891	COIL	1	
					L2	VLQ0890	COIL	1	
					L3	VLQ0891	COIL	1	
					Q1	2SC4081	TRANSISTOR	1	
					Q2	2SJ245S	TRANSISTOR	1	
					Q3	2SA1579	TRANSISTOR	1	
					Q4	2SB1132T100	TRANSISTOR	1	
					Q5-Q8	2SK1254L	TRANSISTOR	4	
					Q9-11	2SC4081	TRANSISTOR	3	
• i E1	VEP20780B	MAIN P.C.BOARD	1	(RTL)AJ-VF20WP	Q15	2SC4081	TRANSISTOR	1	
	VEP20780C	MAIN P.C.BOARD	1	(RTL)AJ-VF20WE	Q20	2SC4081	TRANSISTOR	1	
					Q21	2SA1576A	TRANSISTOR	1	
C1	VCS1DQ106	E.CAPACITOR 20V 10M	1		R1	ERJ6GEYG22	M.RESISTOR CH 1/10W 22K	1	
C2	VCS1AQ226	E.CAPACITOR 10V 22M	1		R2	ERJ6GEYF33	M.RESISTOR CH 1/10W 33K	1	
C3	ECUM1H103K	C.CAPACITOR CH 50V 0.01	1		R3	ERJ6GEYG10	M.RESISTOR CH 1/10W 10K	1	
C4	VCEV1EBL33	E.CAPACITOR CH 25V 330U	1		R4	ERJ6GEYG10	M.RESISTOR CH 1/10W 100	1	
C5	VCS1DQ106	E.CAPACITOR 20V 10M	1		R5	ERJ6GEYG33	M.RESISTOR CH 1/10W 3.3K	1	
C6	ECUM1C105Z	C.CAPACITOR CH 16V 1U	1		R6	ERJ6GEYG33	M.RESISTOR CH 1/10W 33K	1	
C7	VCS1DQ106	E.CAPACITOR 20V 10M	1		R7	ERJ6GEYG10	M.RESISTOR CH 1/10W 1K	1	
C8	ECUM1H391J	C.CAPACITOR CH 50V 390U	1		R9	ERJ6GEYG33	M.RESISTOR CH 1/10W 3.3K	1	
C9	VCEA1CBG10	E.CAPACITOR CH 16V 100U	1		R11	ERJ6GEYG33	M.RESISTOR CH 1/10W 33K	1	
C13	ECUM1H103K	C.CAPACITOR CH 50V 0.01	1		R17,18	ERJ6GEYG10	M.RESISTOR CH 1/10W 1K	2	
C14	VCS1DQ335	E.CAPACITOR 20V 3.3M	1		R20,21	ERJ6GEYF47	M.RESISTOR CH 1/10W 4.7K	2	
C15	VCS1CQ107	E.CAPACITOR 16V 100M	1		R22-24	ERJ6GEYG10	M.RESISTOR CH 1/10W 1K	3	
C16	ECUM1H221J	C.CAPACITOR CH 50V 220U	1		R25-27	ERJ6GEY0R0	M.RESISTOR CH 1/10W 0	3	
C18	ECUM1H103K	C.CAPACITOR CH 50V 0.01	1		R28	ERJ6GEYJ47	M.RESISTOR CH 1/10W 47K	1	
C19	ECUM1H470J	C.CAPACITOR CH 50V 47U	1		R29	ERJ6GEYG27	M.RESISTOR CH 1/10W 2.7K	1	
C20,21	ECUX1E104K	C.CAPACITOR CH 25V 0.1U	2		R30,31	ERJ6GEYG15	M.RESISTOR CH 1/10W 1.5K	2	
C24	VCF01AP103	P.CAPACITOR 10V 0.01U	1		R32	ERJ6GEYG10	M.RESISTOR CH 1/10W 1K	1	
C25	VCF01AP562	P.CAPACITOR 10V 5600P	1		R33-35	ERJ6GEYG10	M.RESISTOR CH 1/10W 100	3	
C26	ECUM1H472K	C.CAPACITOR CH 50V 470U	1		R36	ERJ6GEYG10	M.RESISTOR CH 1/10W 10K	1	
C27	VCS1DQ475	E.CAPACITOR 20V 4.7M	1		R37	ERJ6GEYG10	M.RESISTOR CH 1/10W 1K	1	
C28	VCK0302	C.CAPACITOR	1		R38	ERJ6GEYG36	M.RESISTOR CH 1/10W 3.6K	1	
C29	VCEV1HBH4R	E.CAPACITOR CH 50V 4.7U	1		R39	ERJ6GEYG10	M.RESISTOR CH 1/10W 1K	1	
C30	VCEA1JBK27U	E.CAPACITOR CH 63V 27U	1		R40	ERJ6GEYG13	M.RESISTOR CH 1/10W 13K	1	
C31	VCS1DQ476	E.CAPACITOR 20V 47M	1		R41	ERJ6GEYG15	M.RESISTOR CH 1/10W 1.5K	1	
C32	VCS1DQ106	E.CAPACITOR 20V 10M	1		R42	ERJ6GEYG33	M.RESISTOR CH 1/10W 3.3K	1	
C41	ECUM1H104Z	E.CAPACITOR 16V 0.1U	1	AJ-VF20WE	R43,44	ERJ6GEYG10	M.RESISTOR CH 1/10W 10K	2	
CN1	VJP3440A020	CONNECTOR (MALE)	1		R45	ERJ6GEYG56	M.RESISTOR CH 1/10W 5.6K	1	
CN2	VJP1603T	CONNECTOR (MALE)	1		R46	ERJ6GEYG10	M.RESISTOR CH 1/10W 10K	1	
CN3	VJP1942	CONNECTOR (MALE)	1		R48	ERJ6GEYF47	M.RESISTOR CH 1/10W 4.7K	1	
CN4	VJP1603T	CONNECTOR (MALE)	1		R49	ERJ6GEY0R0	M.RESISTOR CH 1/10W 0	1	
CN5	VJP4292	CONNECTOR (MALE)	1		R51	ERJ6GEYG10	M.RESISTOR CH 1/10W 100	1	
CN6	VJP1230T	CONNECTOR (MALE)	1		R52	ERJ6GEY0R0	M.RESISTOR CH 1/10W 0	1	
CP1-P4	VJR1072	PIN	4		R54	ERJ6GEYG22	M.RESISTOR CH 1/10W 22K	1	
D1	SC80204	DIODE	1		R55	ERJ6GEYG18	M.RESISTOR CH 1/10W 18K	1	
D2,D3	DAP202U	DIODE	2		R56	ERJ6GEYF33	M.RESISTOR CH 1/10W 33K	1	
D4	1SS302	DIODE	1		R57	ERJ6GEYG18	M.RESISTOR CH 1/10W 18K	1	
D5	DAN202U-T10	DIODE	1		R58	ERJ8GEYJ1R	M.RESISTOR CH 1/8W 1.2	1	
D6,D7	RLS245	DIODE	2		R60	ERJ6GEYG33	M.RESISTOR CH 1/10W 3.3K	1	
D8	DAN202U-T10	DIODE	1		R61,62	ERJ6GEYG22	M.RESISTOR CH 1/10W 22K	2	
D9	ESJA57-04A	DIODE	1		R63	ERJ6GEYG10	M.RESISTOR CH 1/10W 10K	1	
D10	RLS245	DIODE	1		R65	ERJ6GEYG10	M.RESISTOR CH 1/10W 100	1	
D13	RLS245	DIODE	1		R66	ERJ6GEYG56	M.RESISTOR CH 1/10W 5.6K	1	
E1	VJR1072	PIN	1		R67	ERJ6GEYF47	M.RESISTOR CH 1/10W 4.7K	1	
FBT	VLT0949	FLYBACK TRANSFORMER	1		R68	ERJ6GEYG10	M.RESISTOR CH 1/10W 10K	1	
HLC	VLQ0889	HORIZON LINEAR COIL	1		R69	ERJ6GEYG10	M.RESISTOR CH 1/10W 1M	1	
IC	TC74HC164AF	IC	1		R70	ERJ6GEYG10	M.RESISTOR CH 1/10W 1K	1	
IC2	TC74HC08AF	IC	1		R71	ERJ6GEYG10	M.RESISTOR CH 1/10W 10K	1	
IC3	TC7W04F	IC	1		R72-74	ERJ6GEYJ33	M.RESISTOR CH 1/10W 3.3K	3	
					R75	ERJ6GEYG10	M.RESISTOR CH 1/10W 100	1	
					R76	ERJ6GEYG22	M.RESISTOR CH 1/10W 22K	1	
					R77	ERJ6GEYG68	M.RESISTOR CH 1/10W 68	1	
					R78	ERJ6GEYG10	M.RESISTOR CH 1/10W 10K	1	
					R80	ERJ6GEYG10	M.RESISTOR CH 1/10W 1K	1	

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Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
R81	ERJ6GEYJR0M	M.RESISTOR CH 1/10W 5.6K	1	
R101	ERJ6GEY0R0M	M.RESISTOR CH 1/10W 0.1	1	
R104,05	ERJ6GEYG10M	M.RESISTOR CH 1/10W 10K	2	
R110	VRE0218	M.RESISTOR	1	
R111	ERJ6GEYG10M	M.RESISTOR CH 1/10W 10K	1	
RV1	VRV0303B10Z	V.RESISTOR 1K	1	
RV3,V4	VRV0303B50Z	V.RESISTOR 5K	2	
RV5	VRV0303B10Z	V.RESISTOR 10K	1	
RV6	VRV0303B50Z	V.RESISTOR 5K	1	
RV7,V8	VRV0303B10Z	V.RESISTOR 10K	2	
S2	VST0332	TOGGLE SWITCH	1	
S3	VST0333	TOGGLE SWITCH	1	
		MISCELLANEOUS		
	VSC4926	SHIELD CASE	1	
iE2	VEP20781A	SUB 1 P.C.BOARD	1	(RTL)AJ-VF20WWP
	VEP20781C	SUB 1 P.C.BOARD	1	(RTL)AJ-VF20WE
C1	VCS1VQ105	E.CAPACITOR 35V 1M	1	
C2-C4	VCS1DQ106	E.CAPACITOR 20V 10M	3	
C5,C6	ECUX1E104K	C.CAPACITOR CH 25V 0.1U	2	
C7,C8	VCS1DQ106	E.CAPACITOR 20V 10M	2	
C9	VCS1VQ105	E.CAPACITOR 35V 1M	1	
C10	ECUX1H682K	C.CAPACITOR CH 50V 6800P	1	
C12	ECHU1C472J	P.CAPACITOR 16V 4700P	1	
C13	ECUM1E223K	C.CAPACITOR CH 25V 0.022	1	
C14,15	ECUX1E104K	C.CAPACITOR CH 25V 0.1U	2	
C16,17	VCS1VQ105	E.CAPACITOR 35V 1M	2	
C19	ECUM1H472K	C.CAPACITOR CH 50V 4700P	1	
C20	VCEV1CBJ10	E.CAPACITOR 16V 100U	1	
C21	ECUM1H221J	C.CAPACITOR CH 50V 220P	1	
C22	ECUM1H153K	C.CAPACITOR CH 50V 0.015	1	
C23	VCS1DQ335	E.CAPACITOR 20V 3.3M	1	
C24	ECUX1E104K	C.CAPACITOR CH 25V 0.1U	1	
C25	VCS1DQ106	E.CAPACITOR 20V 10M	1	
C26	ECUM1H562K	C.CAPACITOR CH 50V 5600P	1	
C27	VCEV1CBL47	E.CAPACITOR 16V 470U	1	
CN21	VJP1614	CONNECTOR (MALE)	1	
CN22	VJP1843	CONNECTOR (MALE)	1	
CP3	VJR1072	TEST POINT	1	
D1	CL-200HRCTU	LED	1	
D2	DAN202U-T10	DIODE	1	
D3	1SS302	DIODE	1	
IC1	HA11423MP	IC	1	
Q1,Q2	2SC4081	TRANSISTOR	2	
Q3	IMZ1	TRANSISTOR-RESISTOR	1	
R1	ERJ6GEYG22M	M.RESISTOR CH 1/10W 2.2K	1	
R2	ERJ6GEYG47M	M.RESISTOR CH 1/10W 47K	1	
R3	ERJ6GEYG10M	M.RESISTOR CH 1/10W 10K	1	
R4	ERJ6GEYF12M	M.RESISTOR CH 1/10W 12K	1	
R5	ERJ6GEYG27M	M.RESISTOR CH 1/10W 27K	1	
R6	ERJ6GEYG10M	M.RESISTOR CH 1/10W 10K	1	
R7	ERJ6GEYF82M	M.RESISTOR CH 1/10W 8.2K	1	
R8	ERJ6GEYG10M	M.RESISTOR CH 1/10W 10K	1	
R9	ERJ6GEYG22M	M.RESISTOR CH 1/10W 22K	1	
R10	ERJ6GEYG12M	M.RESISTOR CH 1/10W 12K	1	
R11	ERJ6GEYG10M	M.RESISTOR CH 1/10W 10K	1	
R12	ERJ6GEYG68M	M.RESISTOR CH 1/10W 68K	1	
R13	ERJ6GEYF12M	M.RESISTOR CH 1/10W 12K	1	
R14	ERJ6GEYF82M	M.RESISTOR CH 1/10W 8.2K	1	
R15	ERJ6GEYF33M	M.RESISTOR CH 1/10W 33K	1	

Ref.No.	Part No.	Part Name & Description	Qty	Remarks
R16	ERJ6GEYG22	M.RESISTOR CH 1/10W 2.2K	1	
R17	ERJ6GEYF47	M.RESISTOR CH 1/10W 47K	1	
R18	ERJ6GEYJ22	M.RESISTOR CH 1/10W 22K	1	
R19	ERJ6GEYG56	M.RESISTOR CH 1/10W 5.6K	1	
R20	ERJ6GEYG10	M.RESISTOR CH 1/10W 10K	1	
R21	ERJ6GEYG68	M.RESISTOR CH 1/10W 6.8K	1	
R22	ERJ6GEYG10	M.RESISTOR CH 1/10W 1K	1	
R23	ERJ6GEY0R0	M.RESISTOR CH 1/10W 0	1	
R24	ERJ6GEYJ15	M.RESISTOR CH 1/10W 15K	1	
R25	ERJ6GEYG33	M.RESISTOR CH 1/10W 3.3K	1	
R26	ERJ6GEYF47	M.RESISTOR CH 1/10W 4.7K	1	
R27	ERJ6GEYJ47	M.RESISTOR CH 1/10W 4.7K	1	
R28	ERJ6GEYF33	M.RESISTOR CH 1/10W 33K	1	
R29	ERJ6GEYF47	M.RESISTOR CH 1/10W 47K	1	
R30	ERJ6GEYG10	M.RESISTOR CH 1/10W 10K	1	
R31	ERJ6GEYF56	M.RESISTOR CH 1/10W 56K	1	
R32	ERJ6GEYJ47	M.RESISTOR CH 1/10W 47K	1	
R33	ERJ6GEYJ10	M.RESISTOR CH 1/10W 10K	1	
RV1,V2	EVML1GA00B	V.RESISTOR 5K	2	
RV3,V4	EVML1GA00B	V.RESISTOR 500	2	
		MISCELLANEOUS		
	VMP6012	P.C.BOARD STAY	1	
	XSB2+4FC	SCREW	2	
* E3	VEP20782A	SUB 2 P.C.BOARD	1	(RTL)
C1,C2	VCS1DQ106	E.CAPACITOR 20V 10M	2	
C3	VCS1AQ226	E.CAPACITOR 10V 22M	1	
C4	ECUM1H330J	C.CAPACITOR CH 50V 33P	1	
C5	VCS1DQ106	E.CAPACITOR 20V 10M	1	
C6	ECUM1H330J	C.CAPACITOR CH 50V 33P	1	
C7	VCS1DQ475	E.CAPACITOR 20V 4.7M	1	
C8	ECUM1C105Z	C.CAPACITOR CH 16V 1U	1	
C9,10	ECUM1H101J	C.CAPACITOR CH 50V 100P	2	
C11	VCS1DQ475	E.CAPACITOR 20V 4.7M	1	
C12	VCS1DQ106	E.CAPACITOR 20V 10M	1	
C13	ECUM1H103K	C.CAPACITOR CH 50V 0.01U	1	
C14,15	ECUM1C105Z	C.CAPACITOR CH 16V 1U	2	
CN31	VJP1943	CONNECTOR (MALE)	1	
D1,D2	CL200HR-CTL	DIODE	2	
D3	1SS302	DIODE	1	
D4	HZK4ALL	DIODE	1	
D5	1SS302	DIODE	1	
D6	HZK9CL	DIODE	1	
DL1	VLD0413	DELAY	1	
IC1	TC4W66F	IC	1	
IC2	UPC358G2-E2	IC	1	
IC3	TC4W53F	IC	1	
L1	VLQ0892	COIL	1	
Q1,Q2	2SC4081	TRANSISTOR	2	
Q3-Q7	2SC417-F14	TRANSISTOR	5	
Q8-10	2SC4102	TRANSISTOR	3	
Q11	2SA1579-T10	TRANSISTOR	1	
Q12	2SK664	TRANSISTOR	1	
R1	ERJ6GEY0R0	M.RESISTOR CH 1/10W 0	1	
R2	ERJ6GEYG10	M.RESISTOR CH 1/10W 10K	1	
R3	ERJ6GEYG10	M.RESISTOR CH 1/10W 1K	1	
R4	ERJ6GEYG27	M.RESISTOR CH 1/10W 27K	1	
R5	ERJ6GEYG22	M.RESISTOR CH 1/10W 22K	1	
R6	ERJ6GEYG10	M.RESISTOR CH 1/10W 10K	1	

AJ-VF20WP/E

[illegible]

AJ-VF20WP

[illegible]

SECTION 1

OPERATING INSTRUCTIONS

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Features

- The high-resolution CRT delivers superb picture sharpness, making focusing easier.
- The low-flare CRT makes the screen clear and easy on the eyes.
- The large eyecup aperture makes it possible to see the screen even when holding the viewfinder at some distance from your eye.
- The eyepiece is easily detachable.
- Easy, one-touch left-right and forward-backward position adjustment.

Specifications

Power supply:	DC 12 V (supplied by camera)
Power consumption:	2.1 W (AJ-VF15P, AJ-VF15E) 2.7 W (AJ-VF20WP, AJ-VF20WE)

Picture tube:

- 1.5-inch high-resolution monochrome picture tube (AJ-VF15P, AJ-VF15E)
- 2-inch high-resolution monochrome picture tube (AJ-VF20WP, AJ-VF20WE)

Horizontal resolution:

600 lines (center, typical, 4 : 3 mode)

Image system:

- 525 lines, 60 fields (AJ-VF15P, AJ-VF20WP)
- 625 lines, 50 fields (AJ-VF15E, AJ-VF20WE)

External adjustment controls:

- Controls (BRIGHT, CONTRAST, PEAKING)
- Switches (TALLY HIGH/OFF/LOW, ZEBRA ON/OFF)

Allowable temperature range:

32°F to 104°F (0°C to 40°C)

Allowable humidity range:

85% or less (no condensation)

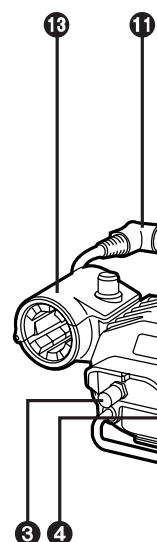
External dimensions (W×H×D):

9 1/2"×3 3/16"×8 1/8" (240×80×206 mm)

Weight:

2.09 lb (950 g)

Parts and Their Functions



1 ZEBRA (Zebra Pattern) Switch

Displays a zebra pattern inside the viewfinder.

ON: Displays a zebra pattern.

OFF: No zebra pattern displayed. The details of the display on the camera used as a reference for details.

2 TALLY Switch

Controls the front tally lamp.

HIGH: Makes the front tally lamp glow.

OFF: Turns the front tally lamp off.

LOW: Makes the front tally lamp glow dimly.

3 PEAKING Knob

Adjusts the outlines of the image. Turning this control has no effect on the output signal.

4 CONTRAST Knob

Adjusts the contrast of the image. Turning this control has no effect on the output signal.

5 BRIGHT (Brightness) Knob

Adjusts the brightness of the screen inside the viewfinder. The setting of this control has no effect on the output signal of the camera.

6 Front Tally Lamp

Lights when the VTR is recording and the TALLY switch is set to HIGH or LOW. Also, flashes on and off as a warning indication, in the same manner as the REC lamp, inside the viewfinder.

The brightness of the front tally lamp is controlled by the setting of the TALLY switch (HIGH or LOW).

7 Viewfinder Forward-Backward/Left-Right Position Clamp Lever

Loosen this lever to adjust the viewfinder position in the forward, backward, right or left direction.

8 Eyecup

9 Back Tally Lamp

Lights when the VCR is recording. Also, flashes on and off as a warning indication, in the same manner as the REC lamp inside the viewfinder.

The back tally lamp is hidden when the lever is in the OFF position.

10 Diopter Adjustment Ring

Adjust this control to match the vision of the person using the camera so that the image on the screen in the viewfinder is as clear as possible.

11 Connection Plug

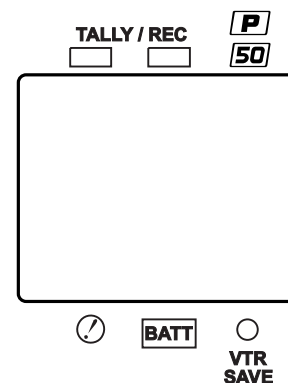
12 Lock Ring

13 Microphone Holder

Internal LEDs

The lamp and picture tube inside the viewfinder.

Refer to the instruction manual.



4 : 3 Display

AJ-VF15P, AJ-VF15E

Adjusting the Viewfinder

Adjusting the Mounting Height of the Viewfinder

The mounting height of the viewfinder will differ depending on the camera on which it is mounted.

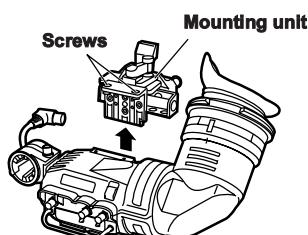
Adjust the mounting height to match the camera on which the viewfinder is to be mounted.

Camera model number		Mounting position
NTSC regions AJ-D810, AJ-D810A, AJ-D900W, AJ-D900WA, AJ-D910WA, AJ-PD900W, AJ-PD900WA	PAL regions AJ-D900W, AJ-D900WA, AJ-D910WA	Factory setting No adjustment of the mounting height is necessary.
NTSC regions AJ-D700, AJ-D700A	PAL regions AJ-D700, AJ-D700A, AJ-D800, AJ-D800A	Change to position A
NTSC regions AQ-23W	PAL regions AQ-23W	Change to position B

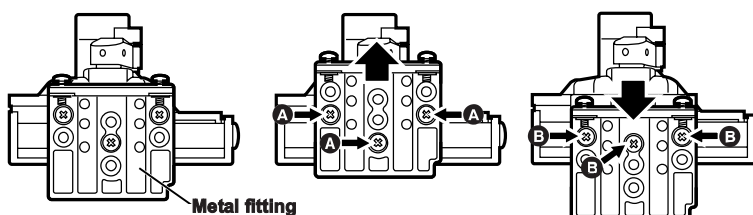
For camera models other than those listed above, please refer to the camera's instruction manual.

Adjusting the height of the mounting unit

1. Detach the two screws, then detach the mounting unit.

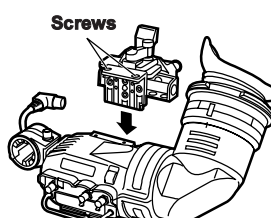


2. Replace the three screws in the positions indicated as A or B from the present positions and change the position of the metal fitting.



Re-fix the metal fitting by fastening the screws together with the spring washer.

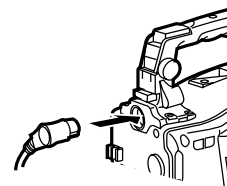
3. Secure the mounting unit in place with the two screws.



Adjusting the Viewfinder

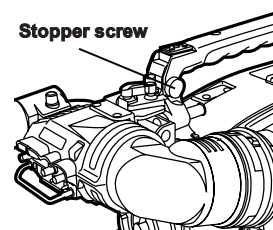
Mounting the Viewfinder

1. Confirm that the POWER
2. Insert the plug into the cc
<Note>
Be sure to insert the plug
3. Push the viewfinder down
4. Tighten the stopper screw



Detaching the Viewfinder

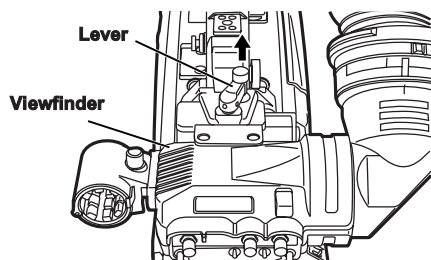
1. Confirm that the POWER
2. Loosen the stopper screw
<Note>
Use both hands to detach with one hand, resulting i
3. Disconnect the connectic



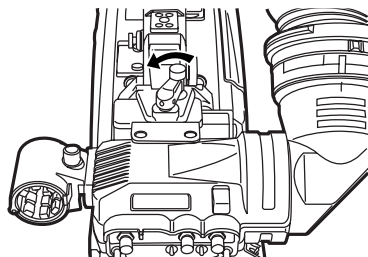
Adjusting the Viewfinder

Position Adjustment

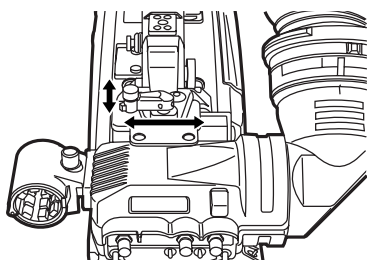
1. Lift up the viewfinder forward-backward/left-right position clamp lever to disengage the lock.



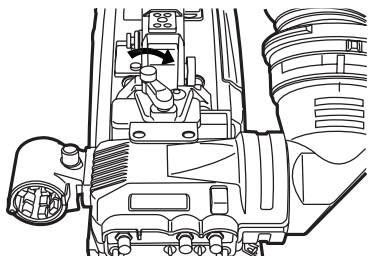
2. Loosen the viewfinder forward-backward/left-right position clamp lever.



3. Adjust the position of the viewfinder by moving it forward, backward, left or right.



4. Return the viewfinder forward-backward/left-right position clamp lever to the locked position.



E-9

Adjusting the Viewfinder

Diopter Adjustment

1. Set the POWER switch to the viewfinder.
2. Turn the diopter adjustment so that the picture can be clearly seen.



Screen Adjustment

Adjust the condition of the viewfinder.

Brightness: Adjust the BRIGHTNESS control.

Contrast: Adjust the CONTRAST control.

Contour: Adjust the PEAKING control.

PEAKING ()
CONTRAST ()
BRIGHT ()

1. Set the POWER switch to the viewfinder.
2. Set the OUTPUT switch to the viewfinder.
3. Turn the viewfinder BRIGHTNESS and CONTRAST controls. Turning the PEAKING control clockwise will produce a sharper picture facilitating easier viewing.

Adjusting the Viewfinder

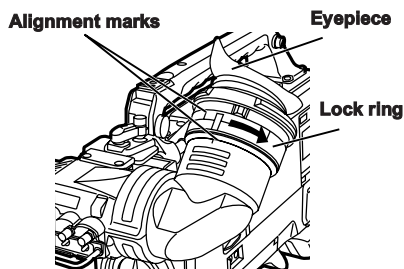
Detaching the Eyecup

If dust has adhered to the CRT screen or mirror, detach the eyecup and remove it.

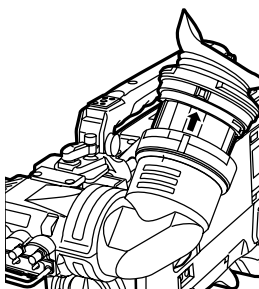
<Note>

Do not wipe the mirror surface under any circumstances as it has been specially treated. Dust which has adhered to the mirror should be blown away with a blower, etc.

1. Turn the lock ring as far as possible in the clockwise and counterclockwise directions to line up the alignment marks on the lock ring and viewfinder barrel.

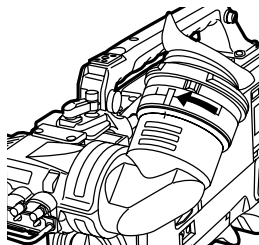


2. Detach the eyecup.



Remounting the Eyecup

1. Line up the alignment marks on the lock ring and the viewfinder barrel and slide the eyecup back into place.
2. Turn the lock ring clockwise as far as the **◀LOCK** position.



Mounting the Microphone

Follow the steps below to install the microphone.

1. Open the microphone holder.



2. Mount the microphone.



3. Plug the microphone connector.



MIC

SECTION 2

DISASSEMBLY PROCEDURES

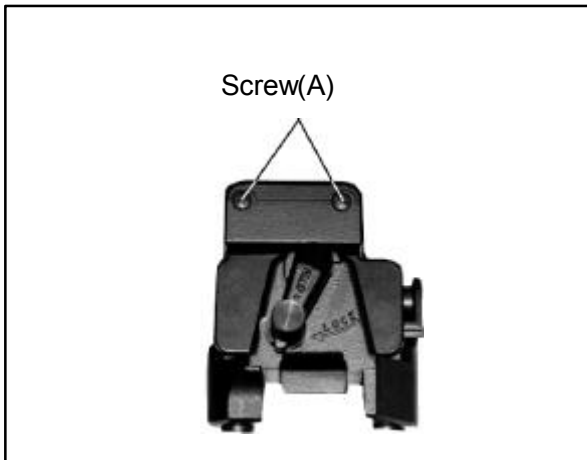
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4.Eye Piece Unit Removal	- - - - -	2-1
5.Upper Case Removal	- - - - -	2-2
6.Bottom Case Removal	- - - - -	2-2
7.CRT Unit Removal	- - - - -	2-2
8.Sub 1 P.C.Board Removal	- - - - -	2-3
9.Sub 2 P.C.Board Removal	- - - - -	2-3
10.MAIN P.C.Board Removal	- - - - -	2-3
11.Guard Bar Removal	- - - - -	2-3
12.LED P.C.Board Removal	- - - - -	2-4
13.Back Tally Base Removal	- - - - -	2-4

Disassemble procedures

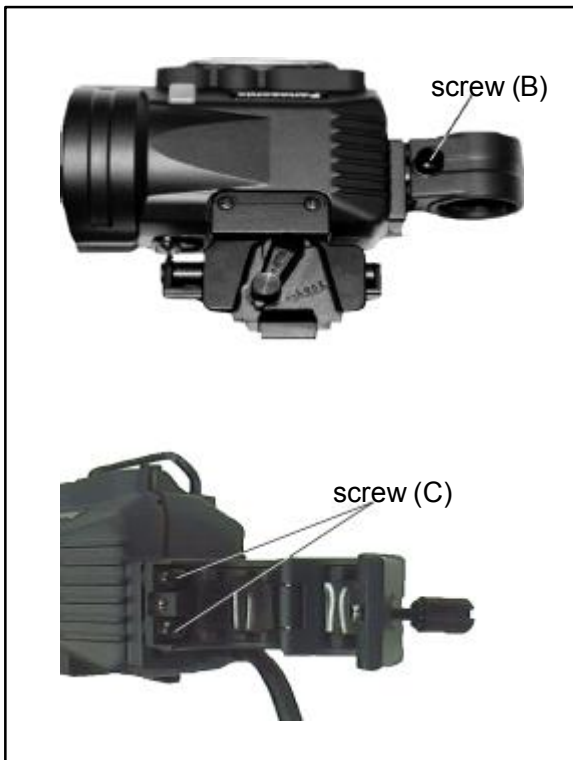
1. Mounting Unit Removal

Unscrew 2 screws (A) so that the mounting plate can be removed.



2. Microphone Holder Removal

1. Unscrew 1 screw (B) so that the microphone holder can be opened as shown figure below.
2. Unscrew 2 screws (C) so that the microphone holder can be removed.



3. Eye Piece Rubber Removal



1. Carefully tear off the portions of the Eye piece.

Note: When assembling the eye piece unit, align the markers as shown in the figure above.

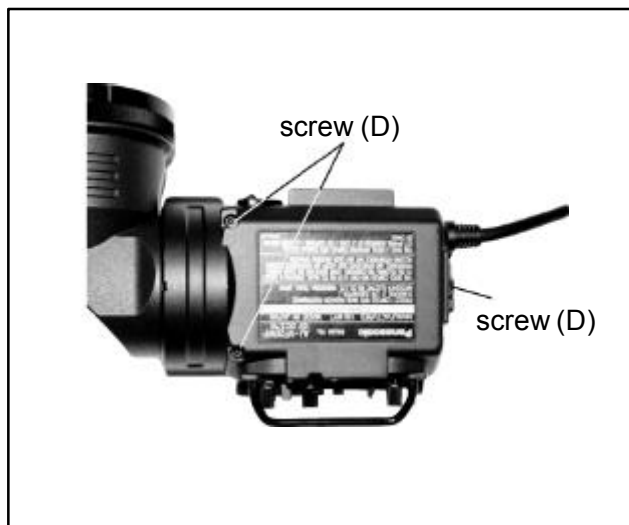
4. Eye Piece Unit Removal

1. Rotate the rock rings fully CW direction so that the eye piece unit can be pulled out.



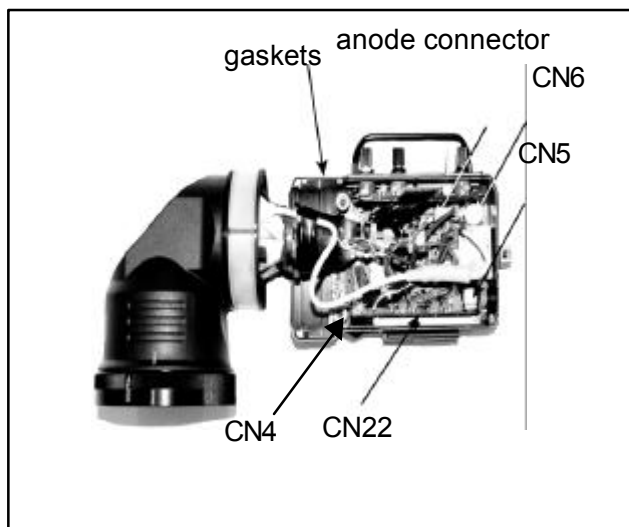
5. Upper Case Removal

1. Unscrew 3 screws (D) so that the upper case can be removed.



6. Bottom Case Removal

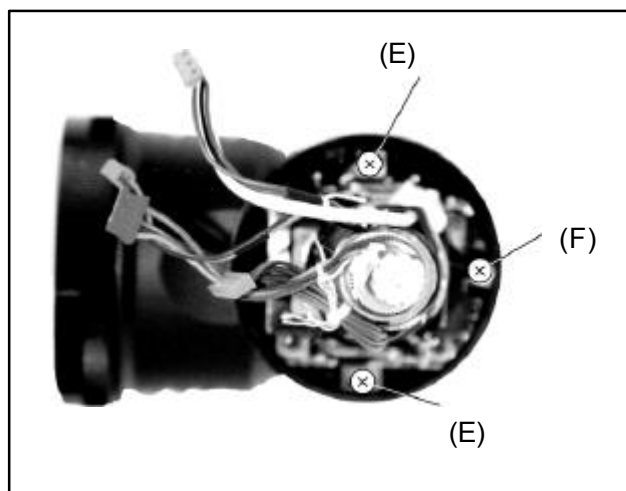
CN22(on Sub 1 P.C.Board)CN4(on Main P.C.Board) CN5 (on Main P.C.Board) CN6 (on Main P.C.Board) And disconnect the CRT anode connector so That the bottom case can be removed.



Casualy disconnect the following connectors.
Note: When assembling the case, make sure that the gaskets are not degraded.

7. CRT Unit Removal

1. Unscrew 2 screws (E) and 1 screw (F).
2. Slowly and carefully pullout the CRT unit.



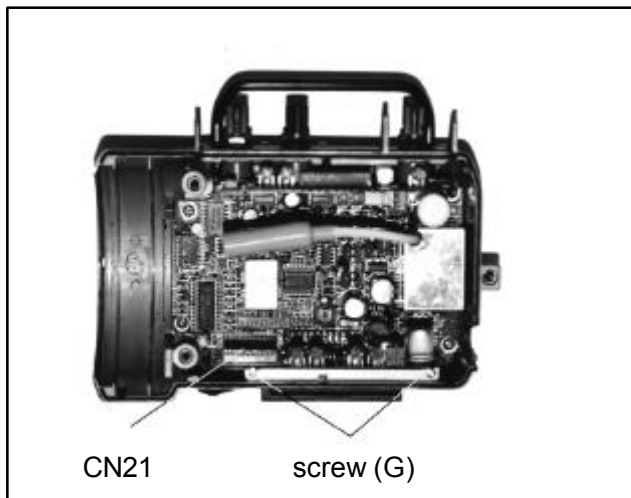
Caution : 1) Do not wipe the surface of the mirror because the special coring has been made on the surface of the mirror. When cleaning the mirror, please use lens blower.



Caution : 2) When assembling the case, make sure that the gasket is not degraded.

8. Sub 1 P.C.Board Removal

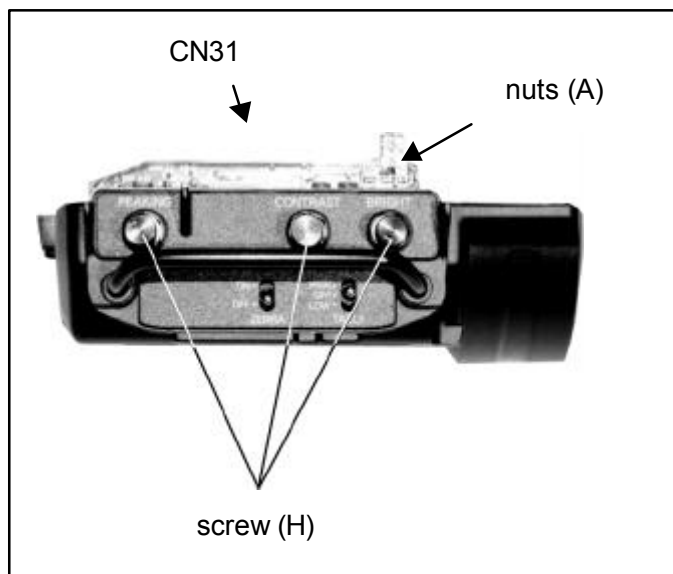
Casually disconnect connector CN21 and unscrew 2 screws (G) so that the Sub 1 P.C.Board can be removed.



9. Sub 2 P.C.Board Removal

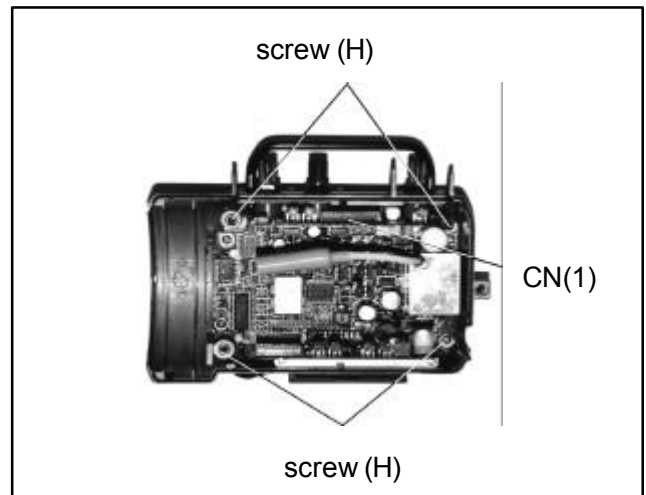
1. Cheerfully disconnect connector CN31.
2. Loosen 3 hex screws on the VR knob and pull out the 3 VR knob.
3. Unscrew 3 nuts (A) so that the sub 2 P.C.Board can be removed.

Note :Do not lose the switch gasket. When assembling the case, make sure that the switch gasket is not degraded.



10. MAIN P.C.Board Removal

1. Carefully disconnect connectors (CN1) so that the EVF Cable can be removed.
2. Unscrew 4 screws (H) so that the Main P.C.Board can be removed.

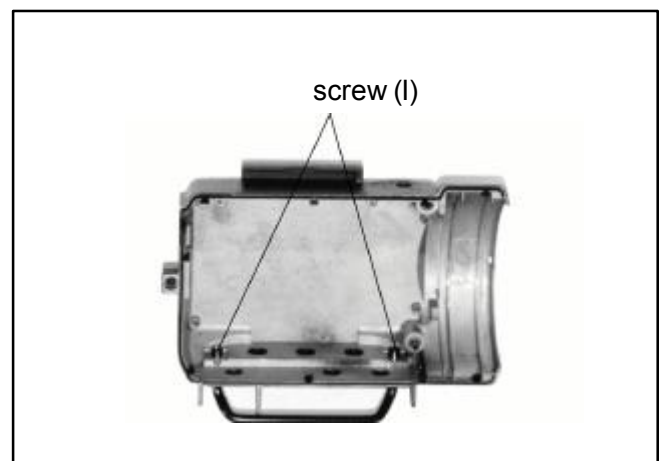


Casually disconnect the following connectors.

Note: When assembling the case, make sure that the gaskets are not degraded.

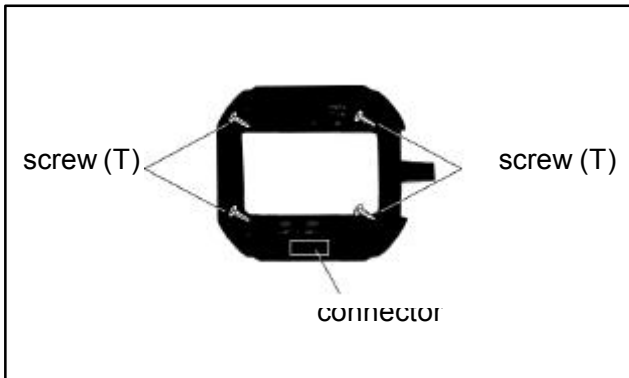
11. Guard Bar Removal

1. Unscrew 2 screws so that the guard bar can be removed.

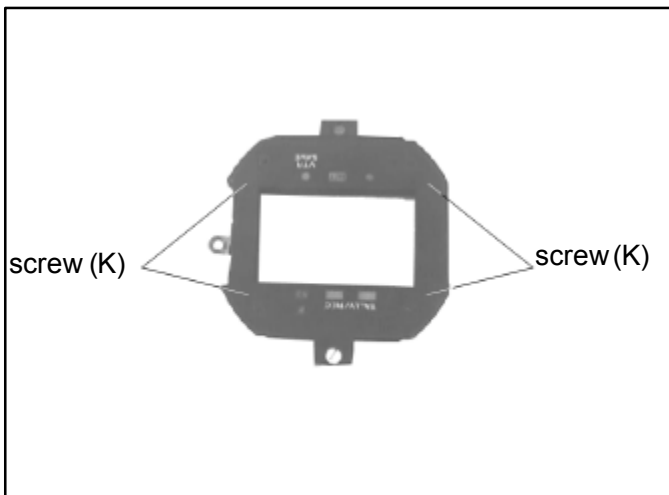


12. LED P.C.Board Removal

1. Carefully disconnect connectors (A) and unscrew 4 screws (J) so that the CRT unit can be removed.

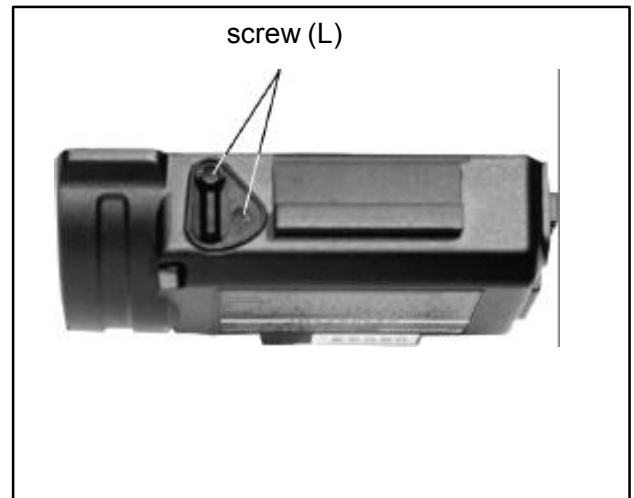


1. Unscrew 4 screws (K) so that the LED P.C.Board can be removed.



13. Back Tally Base Removal

Unscrew 2 screws (L) so that the Back Tally Base can be removed.



SECTION 3

ELECTRICALADJUSTMENT PROCEDURES

SEC 3 electrical adjustment procedures

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1. Preparation

1-1 Measuring Equipment and Special Tools.

No	Item	Recommend Stuff	Note
1	Digital Volt Meter		
2	Frequency Counter		
3	Registration Chart	VFK0673	
4	High voltage prove		Use For High Voltage measurement
5	Screwdriver(for adjustment).Hex Wrench		The screwdriver use the made by resin

The camera recorder becomes necessary separately for the all-kind control such as the aspect changing to the others.

1-2 Adjustment preparation

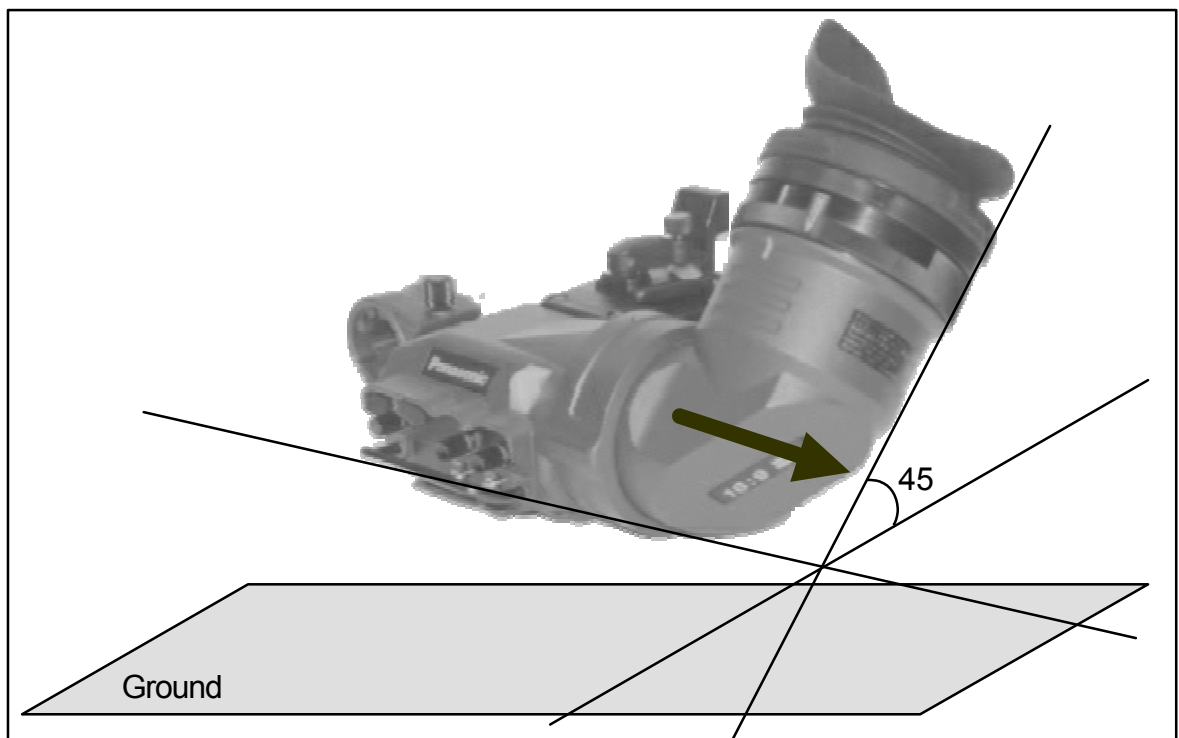
Execute an adjustment under the following environment to attempt various adjustment precision improvement.

(1)Horizontally set the viewfinder unit and Aim the CRT face side as follows.

A) Northern Hemisphere ----- North Direction

B) Southern Hemisphere ----- South Direction

(2) Adjust the angle of the eye piece by 45 as shown below.



2. Electrical Adjustment Procedure (AJ-VF15)

2-1. Power voltage Adjustment

BOARD	MAIN BOARD
SPEC	9.5V +/- 0.1V
TEST	TP2 (CN3 Connector 1pin)
ADJUST	RV1 [V0-ADJ]
M.EQ	Digital Volt Meter

1. Adjust **RV1** so that the Voltage at **TP2** is 9.5V+/-0.1V.

2-2. V Free Run Adjustment

BOARD	MAIN BOARD / SUB1 BOARD
SPEC	48Hz+/- 0.5Hz (NTSC) 38Hz+/- 0.5Hz (PAL)
TEST	TP12 (CN2 Connector 4pin) /MAIN BOARD
ADJUST	RV2 [V-HOLD] / SUB1 BOARD
M.EQ	Frequency Counter

1. Adjust **RV2** so that the frequency at **TP12** is 48Hz+/- 0.5Hz (NTSC) / 38Hz+/- 0.5Hz (PAL)

2-3. H Free Run Adjustment

BOARD	MAIN BOARD / SUB1 BOARD
SPEC	15.73+/-0.05kHz (NTSC) 15.63+/-0.05kHz (PAL)
TEST	TP9 (CN2 Connector 1pin) /MAIN BOARD
ADJUST	RV1 [H-HOLD] /SUB1 BOARD
M.EQ	Frequency Counter

1. Adjust **RV1** so that the frequency at **TP9** is 48Hz+/- 0.5Hz (NTSC) / 38Hz+/-0.5Hz (PAL).

2-4. Focus Adjustment

BOARD	MAIN BOARD
SPEC	5.8kV +/- 0.1kV
TEST	High Voltage Connector (FBT Side)
ADJUST	RV5 [FOCUS]
M.EQ	Digital Volt meter [Use High voltage prove]

1. Set the **CONTRAST VR**, **BRIGHT VR** to the center and

PEAKING VR to the minimum position.

2. Connect the high voltage voltmeter with the high voltage prove to the connector between the FBT and anode cap.
3. Adjust **RV5** so that the High Voltage is within specification.

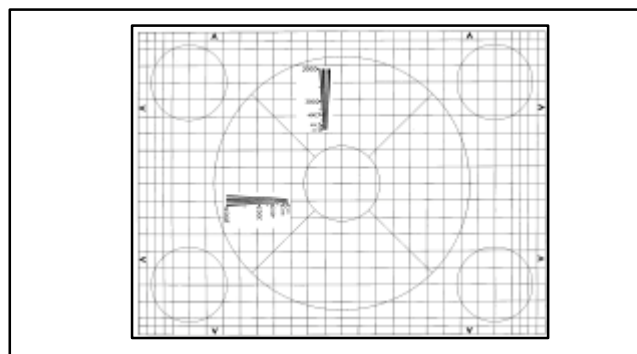


Fig.1 Registration Chart

2-5. Screen size Adjustment

BOARD	MAIN BOARD / SUB1 BOARD
TEST	EVF Picture
ADJUST	RV3 [H-SIZE (WIDE)] / MAIN BOARD RV3 [V-SIZE] / SUB1 BOARD RV5 [V-SIZE (WIDE)] / SUB1 BOARD

Adjustment for 4 : 3 mode

1. Open the on-screen menu on the camera recorder in the 3:4 mode so that the EVF screen is 4:3.
2. Adjust **RV3** (On SUB1 BOARD) so that the V-BLK as is within 1.5point scale shown in figure 2.
3. Adjust the **RV3** (On MAIN BOARD) so that the circle of chart is most round.

Note : This adjustment should be performed after completion the Size Adjustment in the 4:3 mode.

Adjustment for 16:9 mode

1. Open the on-screen menu on the camera recorder in the 16:9 mode so that the EVF screen is 16:9.
2. Adjust **RV5** (On SUB1 BOARD) so that the circle of chart is most round.

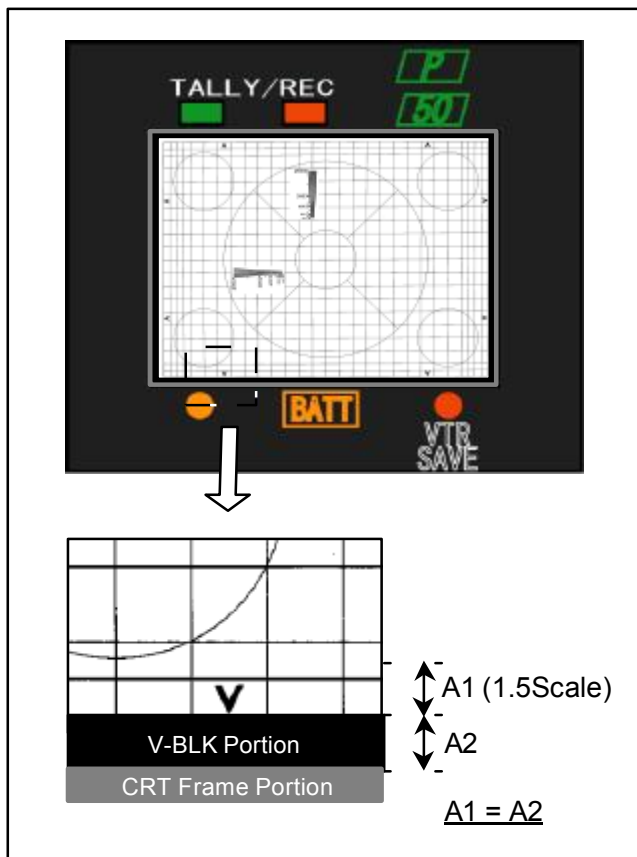


Fig.2 Screen size Adjustment

2-6. Brightness Adjustment

BOARD	SUB2 BOARD
SPEC	Pedestal Portion is Just Dark
TEST	EVF Picture
ADJUST	RV4 [SUB BRIGHT]
SIGNAL	Color Bar from Camera Recorder

Adjustment for 4:3 mode

1. Open the on-screen menu on the camera recorder in the 3:4 mode so that the EVF screen is 4:3.
2. Set the camera recorder in the color bar output mode.
3. Set the **BRIGHT VR**, **CONTRAST VR** to the center position and **PEAKING VR** to the minimum position.
4. Adjust **RV4** at the point where the brightness of the pedestal portion changes from bright to just dark. (Figure.3)

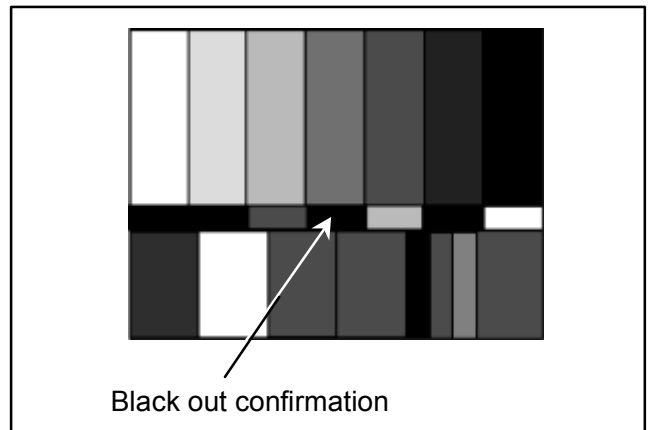


Fig.3 Brightness Adjustment

2-7. High voltage regulator Adjustment

BOARD	MAIN BOARD
SPEC	6.0V+/-0.1V
TEST	TP11 (IC9 7pin)
ADJUST	RV6 [OPAMP-ADJ]
M.EQ	Digital Volt meter

1. Set the **BRIGHT VR**, **CONTRAST VR** and **PEAKING VR** to the minimum position.
2. Adjust **RV6** so that the voltage is 6.0V+/-0.1V.

2-8. Heater voltage Adjustment

BOARD	MAIN BOARD
SPEC	635mV+/-15mV (DC)
TEST	TP5 – TP6 (CN5 connector 3pin-4pin)
ADJUST	RV7 [VH-ADJ]
M.EQ	Digital Volt meter

1. Adjust **RV7** so that the heater voltage is 635mV+/-15mV (DC).

2-9. Peaking Balance Adjustment

BOARD	MAIN BOARD / SUB2 BOARD
SPEC	3.9v+/-0.1v Peaking A = Peaking B
TEST	Pin 16 of CN1 and EVF Picture
ADJUST	RV2 [PEAK-OFFSET]
M.EQ	Digital Volt Meter

1. Set the **BRIGHT VR** to the minimum position, **CON-TRAST VR** to the center position and **PEAKING VR** to the maximum position.
2. Open the on-screen menu on the camera recorder in the 3:4 mode so that the EVF screen is 4:3.
3. Aim the camera recorder to the registration chart, and adjust the zoom and focus so that the full-size and best focus registration chart is displayed on the screen of the EVF.
4. Adjust **RV2** so that the both peaking width "A" and "B" are equal. (Figure.4)

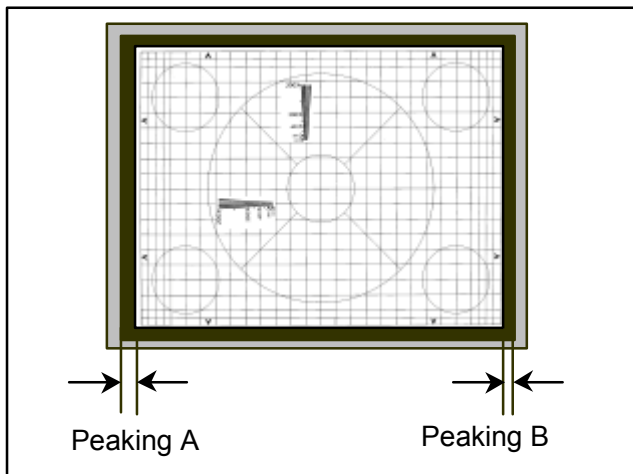


Fig.4 Peaking Balance adjustment

3. Electrical Adjustment Procedures (AJ-VF20W)

3-1. Power voltage Adjustment

BOARD	MAIN BOARD
SPEC	9.5v+/-0.1v
TEST	TP2 (Pin 1 of CN3)
ADJUST	RV1 [V0-ADJ]
M.EQ	Digital Volt Meter

1. Adjust **RV1** so that the voltage is within the specification.

3-2. V. Hold Adjustment

BOARD	MAIN BOARD / SUB1 BOARD
SPEC	48+/-0.5Hz (NTSC) 38+/-0.5Hz (PAL)
TEST	TP12 (Pin 4 of CN2)/ MAIN BOARD
ADJUST	RV2 [V-HOLD] / SUB1 BOARD
M.EQ	Frequency Counter

1. Adjust **RV2** so that the frequency is within the specification.

3-3. H. Hold Adjustment

BOARD	MAIN BOARD / SUB1 BOARD
SPEC	15.73+/-0.05kHz (NTSC) 15.63+/-0.05kHz (PAL)
TEST	TP9 (Pin 1 of CN2)/MAIN BOARD
ADJUST	RV1 [H-HOLD]/SUB1 BOARD
M.EQ	Frequency Counter

1. Adjust **RV1** so that the frequency is within the specification.

3-4. Focus Adjustment

BOARD	MAIN BOARD
SPEC	6.0kv+/-0.1kv
TEST	Connector between FBT/ Anode Cap
ADJUST	RV5 [FOCUS]
M.EQ	High Voltage Meter with High Voltage Probe

1. Aim the camera recorder to the registration chart and adjust the zoom and focus so that the full-size and best focus registration picture is displayed on the screen of EVF.
2. Connect a high volt meter with high voltage prove to the connector the anode cap and FBT.
3. Adjust **RV5** so that the high voltage is within the specification.

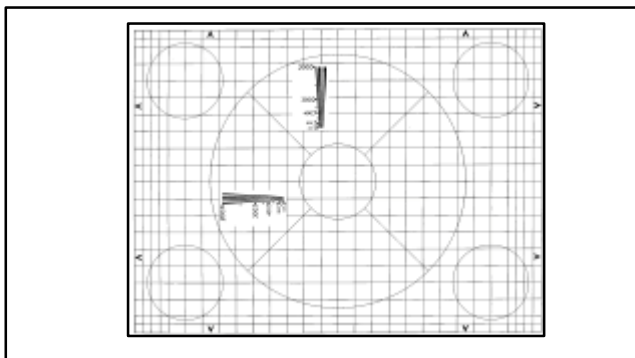


Fig.5 Registration Chart

3-5. Screen Size Adjustment¹ (4:3Mode)

BOARD	MAIN BOARD / SUB1 BOARD
TEST	EVF Screen
ADJUST	RV4 [H-SIZE(HLC)] / MAIN BOARD RV3 [V-SIZE] / SUB1 BOARD

1. Open the on-screen menu on the camera recorder in the 16:9 mode so that the EVF screen is 16:9.
2. Aim the camera recorder to the registration chart and adjust the zoom and focus so that the full-size and best focus registration picture is displayed on the screen of EVF.
3. Adjust **RV3** (On SUB1 BOARD) so that the width of V portion "A1" is 1.5 scale as shown in figure 6.
4. Adjust **RV4** (On Main BOARD) so that the circles at the 4 corners are most round.

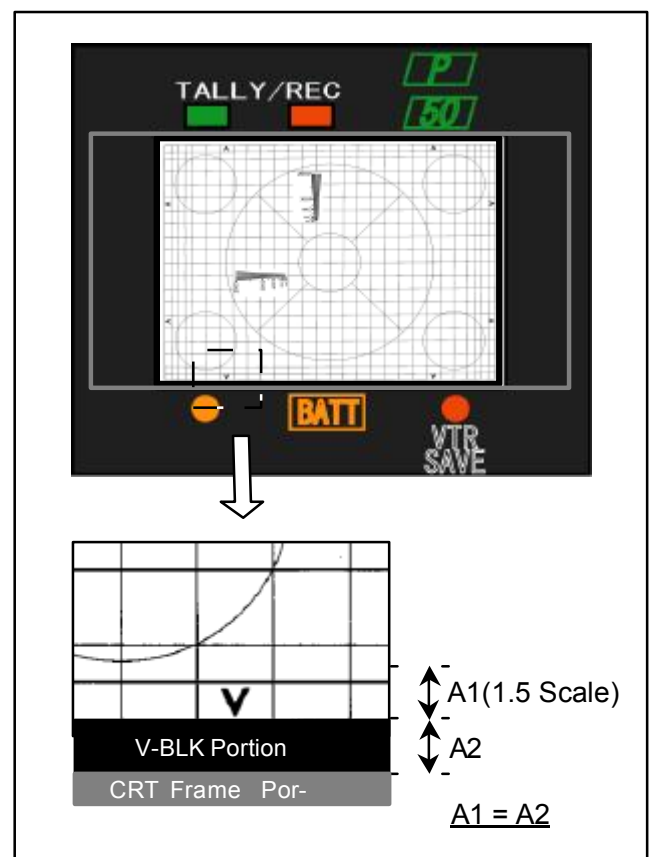


Fig.6 Screen Size Adjustment

3-5. Screen Size Adjustment 2 (16:9 Mode)

BOARD	MAIN BOARD
TEST	EVF Screen
ADJUST	RV3 [H-SIZE (WIDE)] RV8 [H-LIN]
M.EQ	Digital Volt Meter

1. Open the on-screen menu on the camera recorder in the 3:4 mode so that the EVF screen is 16:9.
2. Adjust **RV3** and **RV8** so that the width of H blanking at the both side is 1.5 scale as shown figure 6.
3. Adjust the centering magnet so that the picture is positioned in the escutcheon shown in figure 6.

3-6. Brightness Adjustment 1 (4:3 Mode)

BOARD	SUB2 BOARD
SPEC	Pedestal Portion is Just Dark
TEST	EVF Screen
ADJUST	RV4 [SUB BRIGHT]
SIGNAL	Color Bar Signal from Camera Recorder

1. Open the on-screen menu on the camera recorder in the 3:4 mode so that the EVF screen is 4:3.
2. Turn "On" the color bare mode in the camera recorder as shown in figure 7.
3. Set the **BRIGHT VR** and **CONTRAST VR** at the center position, and **PEAKING VR** at the minimum position.
4. Adjust **RV4** at the position just the illumination of the pedestal changes from just slightly light to dark.

3-6. Brightness Adjustment 2

(16:9 Mode)

BOARD	SUB2 BOARD
SPEC	Pedestal Portion is Just Dark
TEST	EVF Screen
ADJUST	RV6 [SUB BRIGHT (WIDE)]
SIGNAL	Color Bar Signal from Camera Recorder

1. Open the on-screen menu on the camera recorder in the 16: 9 mode so that the EVF screen is 16: 9 too.
2. Turn "On" the color bare mode in the camera recorder.
3. Set the **BRIGHT VR** and **CONTRAST VR** at the center and **PEAKING VR** at the minimum position.
4. Adjust **RV4** at the position just the illumination of the pedestal changes from just slightly light to dark.

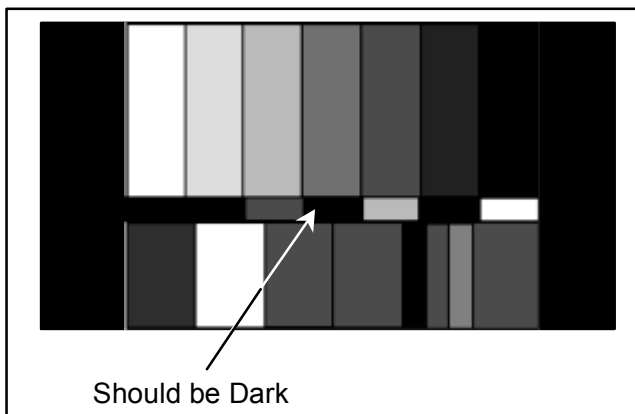


Fig.7 Brightness Adjustment

3-7. High Voltage Regulator Adjustment

BOARD	MAIN BOARD
SPEC	6.0v+/-0.1v
TEST	TP11 (Pin 7 of IC9)
ADJUST	RV6 [OPAMP-ADJ]
M.EQ	Digital Voltmeter

1. Set the **BRIGHT VR**, **CONTRAST VR** and **PEAKING VR** at the minimum position.
2. Open the on-screen menu on the camera recorder in the 16:9 mode so that the EVF screen is 16:9 too.
3. Connect the digital voltmeter to **TP11**.
4. Adjust **RV6** so that the voltage is 6.0V +/- 0.1V.

3-8. Heater Voltage Adjustment

BOARD	MAIN BOARD
SPEC	635mV+/-15mV (DC)
TEST	TP5 (Hot) & TP6 GND (Pins 3 & 4 CN5)
ADJUST	RV7 [VH-ADJ]
M.EQ	Digital Voltmeter

1. Connect the voltmeter to **TP5** (Hot) and **TP6** (GND).
2. Adjust **RV7** so that the voltage is 635mV+/-15mV.

3-9. Peaking Balance Adjustment

BOARD	MAIN BOARD / SUB2 BOARD
SPEC	3.9V+/-0.1V Peaking A = Peaking B
TEST	Pin 16 of CN1 / EVF Screen
ADJUST	RV2 [PEAK-OFFSET]
M.EQ	Digital Voltmeter

1. Set the **BRIGHT VR** and **CONTRAST VR** at the center, **PEAKING VR** at maximum position.
2. Aim the camera recorder to the registration chart and adjust the zoom and focus so that the full size of the chart is displayed on the EVF screen.
3. Open the on-screen menu on the camera recorder in the 16:9 mode so that the EVF screen is 16: 9.
4. Adjust **RV2** so that the both peaking width "A" and "B" are equal. (Figure.8)

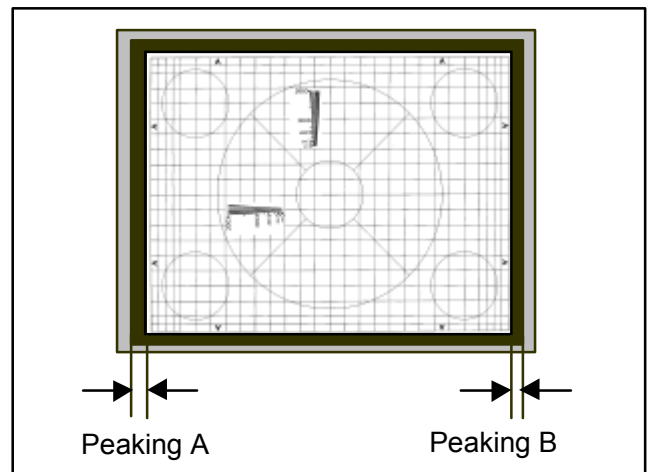


Fig.8 Peaking Balance adjustment

SECTION 4

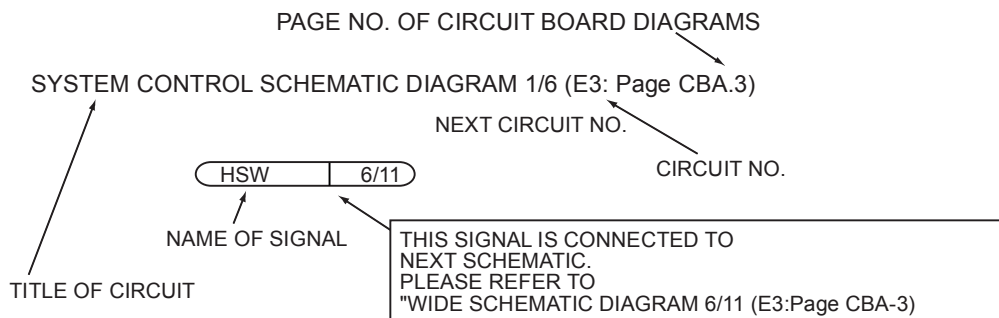
BLOCK DIAGRAMS SCHEMATIC DIAGRAMS CIRCUIT BOARD DIAGRAMS

Note:

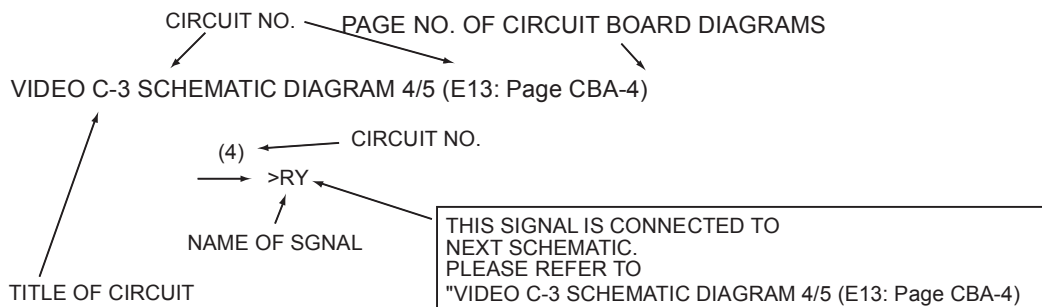
1. Do not use the part number shown on the schematic diagram or P.C.Board layout for ordering.
The correct part number for ordering is shown in the Exploded Views / Parts List section.
2. Unless otherwise specified, all resistors are in OHMS, K=1,000 OHMS, all capacitors are in MICROFARADS (uF), P=uuF.

NOTE

(EX 1)



(EX 2)



* Mark → Parts value, see table in the schematic diagram.

(EX:)

	AJ-D700	AJ-D800
R2018	10K	10K
R2019	20K	*PAT

10K ohm
No part


CONTENTS

EVF BLOCK DIAGRAMS	- - - - -	BLK1
MAIN SCHEMATICK DIAGRAMS	- - - - -	SCM1
MAIN SUB1 SCHEMATICK DIAGRAMS	- - - - -	SCM2
MAIN SUB2 SCHEMATICK DIAGRAMS	- - - - -	SCM3
MAIN P.C.BOARD	- - - - -	PTN1
MAIN SUB1 P.C.BOARD	- - - - -	PTN1
MAIN SUB2 P.C.BOARD	- - - - -	PTN2
LED P.C.BOARD	- - - - -	PTN2

CAUTION

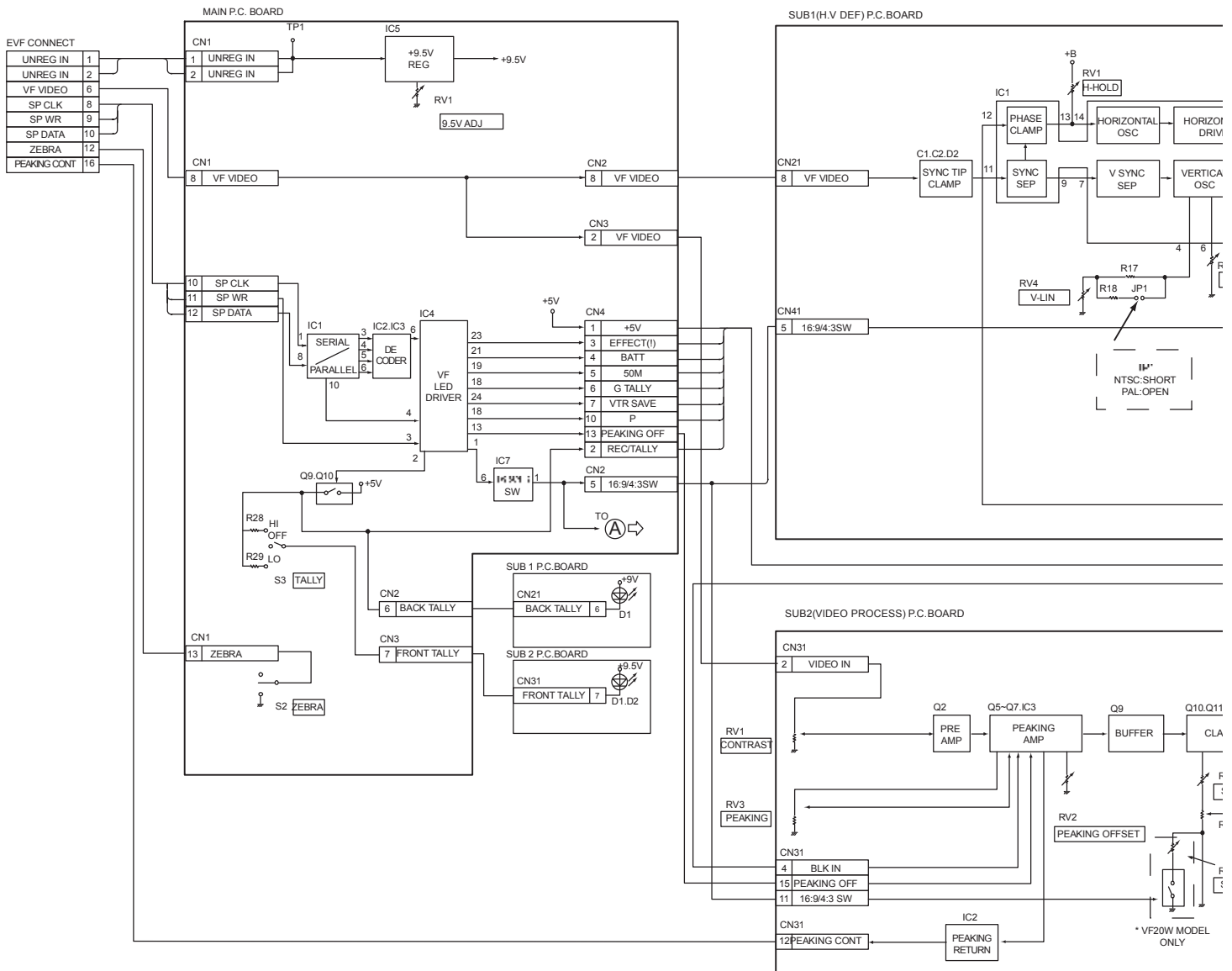
THE [] MARK INDICATES THE PRIMARY CIRCUIT TO DISTINGUISH THE PRIMARY FROM THE SECONDARY CIRCUIT. PAY ATTENTION NOT TO RECEIVE AN ELECTRIC SHOCK DURING REPAIR AND SERVICE OF THE PRODUCTS.

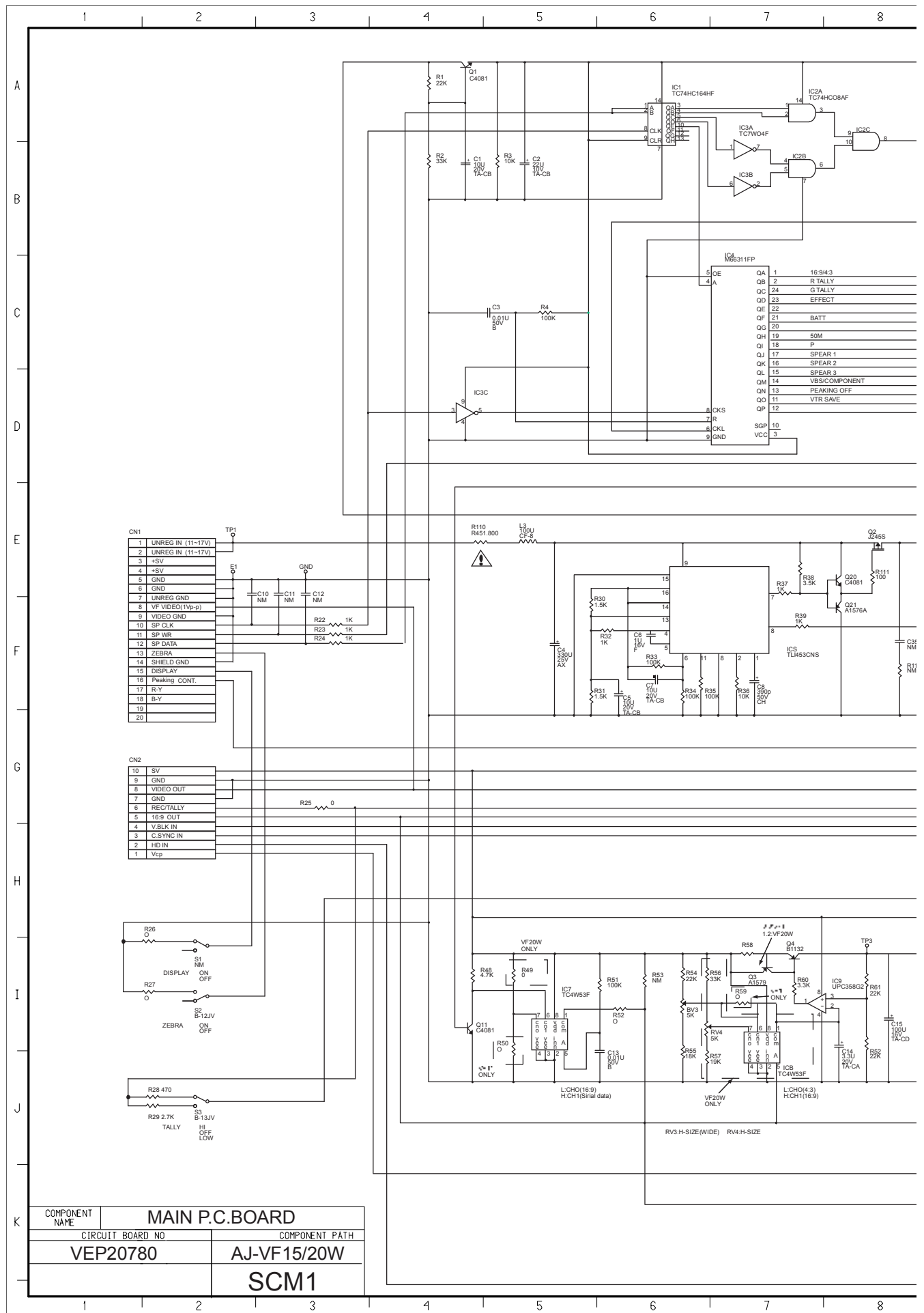
IMPORTANT SAFETY NOTICE:

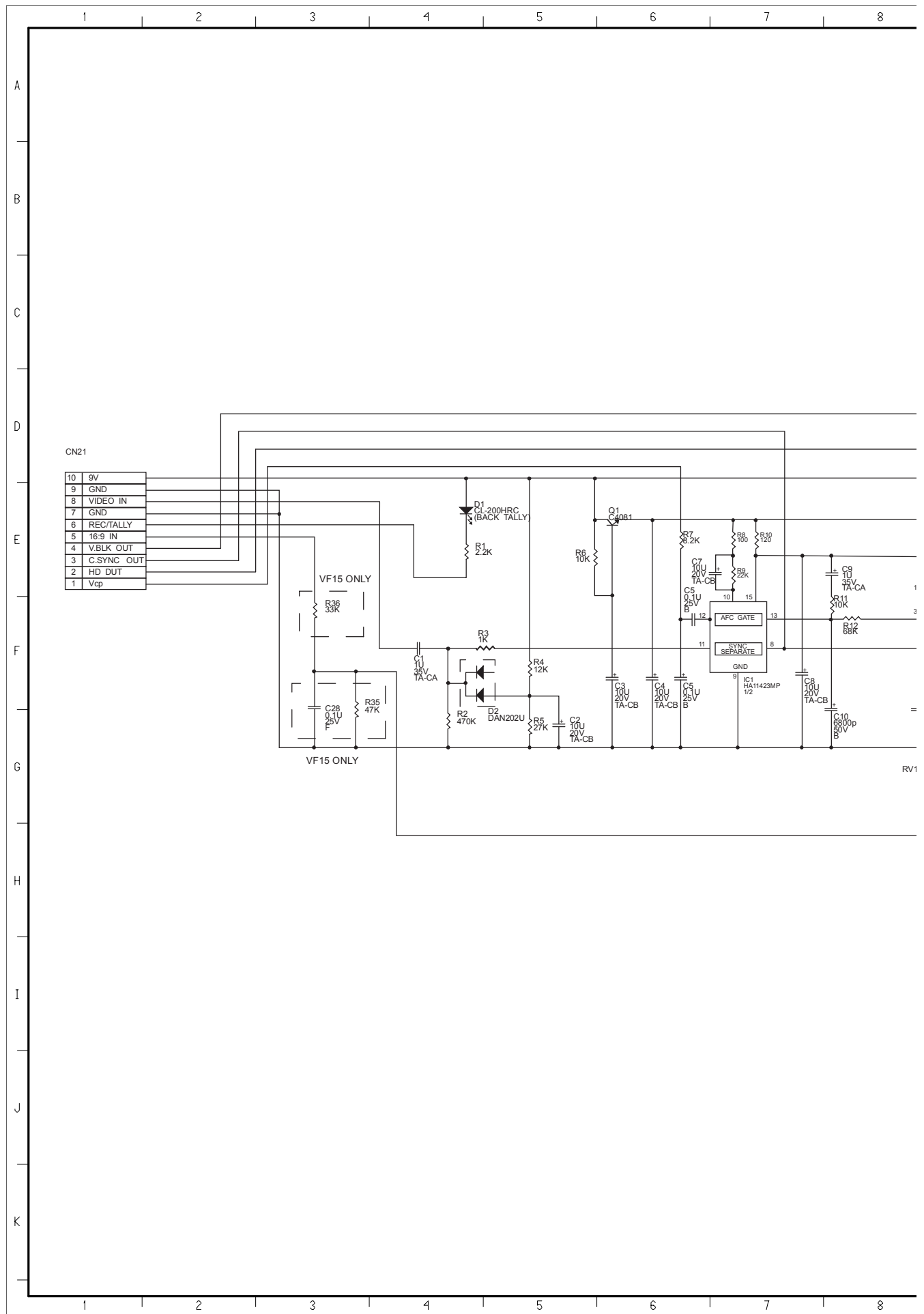
Components identified with the mark  have the special characteristics for safety.

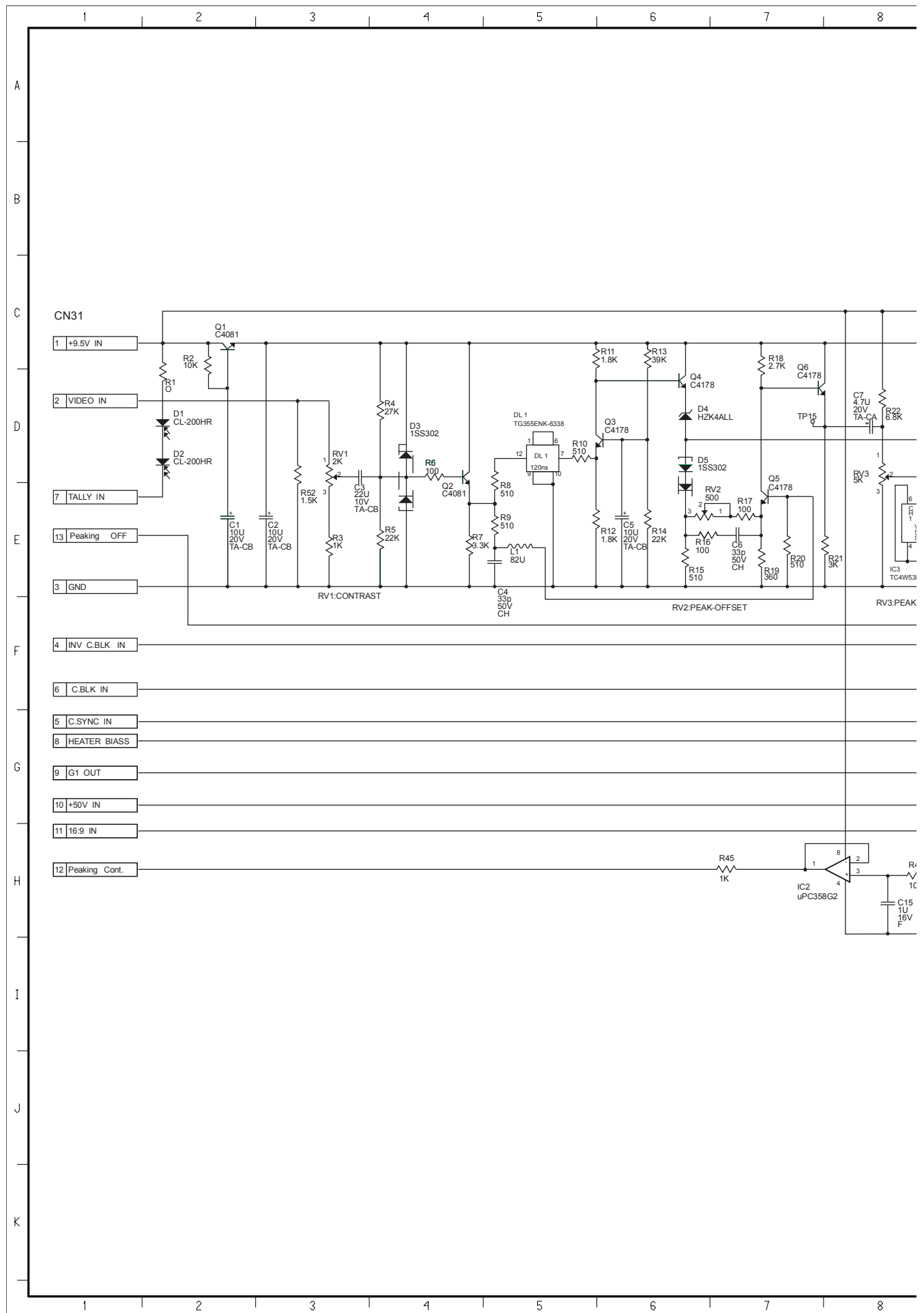
When replacing any of these components, use only the same type.

EVF BLOCK DIAGRAM









SECTION 5

EXPLODED VIEWS

&

REPLACEMENT PARTS LIST

Note:

1. *Be sure to make your orders of replacement parts according to this list.
2. Unless otherwise specified, all resistors are in OHMS, K=1,000
OHMS, all capacitors are in MICROFARADS (μ F), P=pF.
3. The P.C. Board units marked with "n" shown below the main assembled parts.
4. The parts marked with (E) on the exploded view show the electric parts.
5. **IMPORTANT SAFETY NOTICE**
Components identified with the mark <I> have the special characteristics for safety. When replacing any of these components, use only the same type.
6. The marking (RTL) indicates the retention time is limited for this item.
After the discontinuation of this assembly in production, it will no longer be available

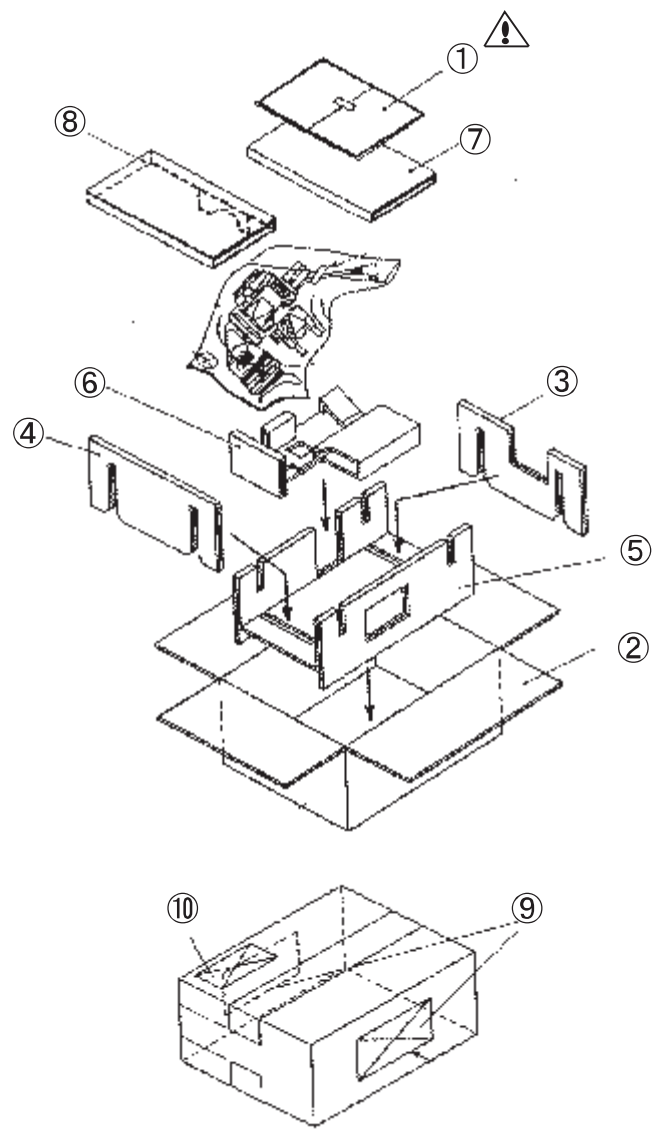
<<Abbreviations for part>>

<NAME>	<DESCRIPTIONS>
C. CAPACITOR	: CERAMIC CAPACITOR
C. CAPACITOR CH	: CERAMIC CHIP CAPACITOR
E. CAPACITOR	: ELECTROLYTIC CAPACITOR
G. CAPACITOR	: GLASS CAPACITOR
M. CAPACITOR	: MICA CAPACITOR
P. CAPACITOR	: PLASTIC FILM CAPACITOR
S. CAPACITOR	: SEMI-CONDUCTOR CAPACITOR
T. CAPACITOR	: TANTALUM CAPACITOR
TRIMMER	: TRIMMER
C. RESISTOR	: CARBON RESISTOR
F. RESISTOR	: FUSE RESISTOR
M. RESISTOR	: METAL OXIDE RESISTOR
M. RESISTOR CH	: METAL OXIDE CHIP RESISTOR
S. RESISTOR	: SOLID RESISTOR
V. RESISTOR	: VARIABLE RESISTOR
W. RESISTOR	: WIRE WOUND RESISTOR
COMBI. TR-R	: TRANSISTOR-RESISTOR COMBINATION PARTS
COMBI. R-R	: RESISTOR-RESISTOR COMBINATION PARTS
COMBI. C-R	: CAPACITOR-RESISTOR COMBINATION PARTS
COMBI. C-R-R	: CAPACITOR-RESISTOR-COIL COMBINATION PARTS
P.C. BOARD	: PRINTED CIRCUIT BOARD
W/COMPONENT	: WITHCOMPONENT

CONTENTS

Packing Parts Assembly	- - - - -	PRT1
Mechanical Parts Assembly	- - - - -	PRT2
Electrical Replacement Parts List	- - - - -	PRT4

PACKING PARTS ASSEMBLY



PACKING PARTS ASSEMBLY

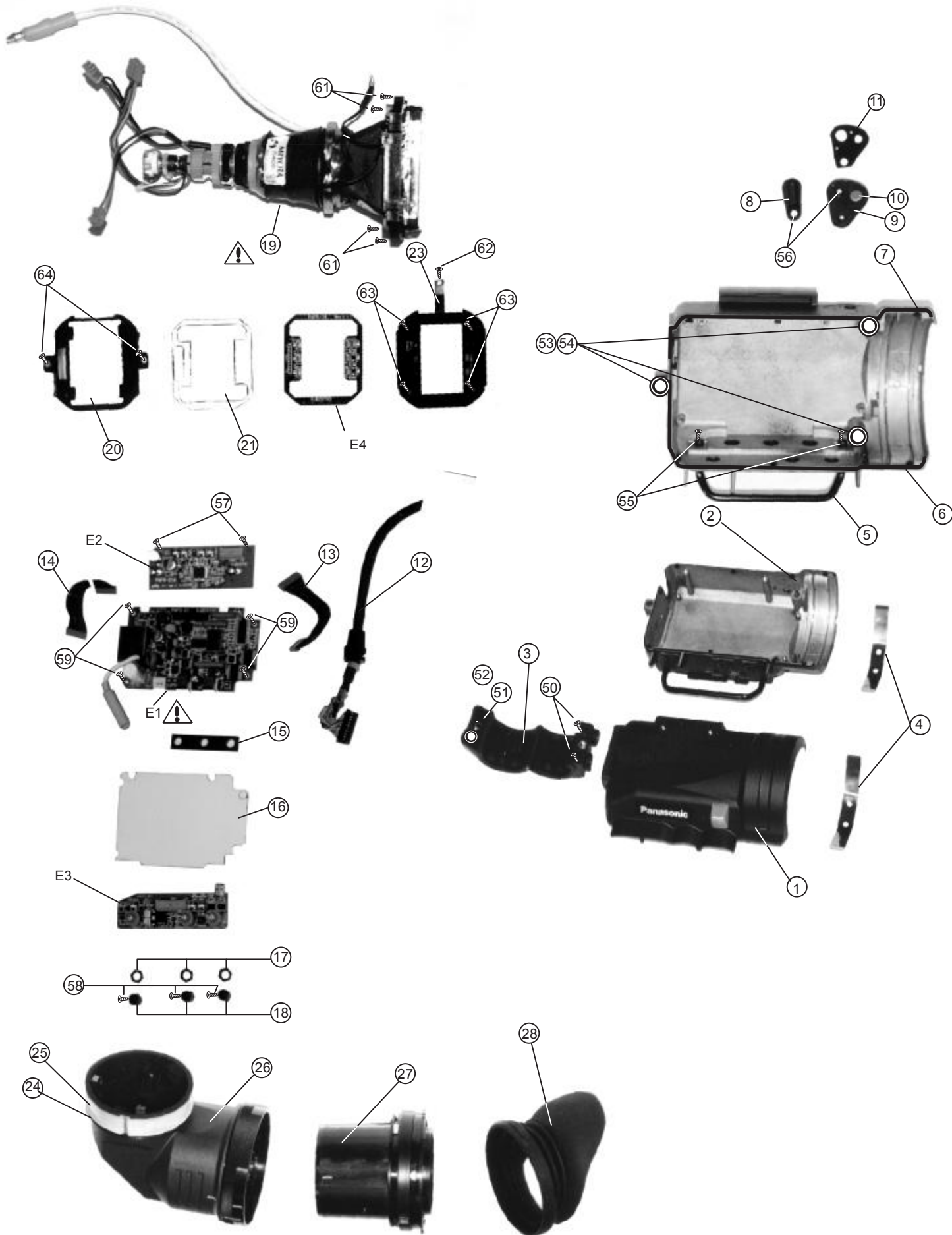
AJ-YAD230P

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks	Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
1	VQT8082	OPERATING INSTRUCTION	1						
2	VPG0A71	PACKING CASE	1						
3	VPN5247	CUSHION A	1						
4	VPN5248	CUSHION B	1						
5	VPN5249	CUSHION C	1						
6	VPN5250	CUSHION D	1						
7	VPN5251	CUSHION E	1						
8	VPN5252	CUSHION F	1						
9	VQL9822	PACKING LABEL	1						
10	VQL8185	CAUTION LABEL	1						

AJ-VF15P_E/VF20WP_E

[illegible]

MECHANICAL PARTS ASSEMBLY



PRT-3

AJ-VF15P/E

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks	Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
• i E1	VEP20780B	MAIN P.C.BOARD	1	(RTL)AJ-VF15P	IC5	TL1453CNS	IC	1	
• i E1	VEP20780D	MAIN P.C.BOARD	1	(RTL)AJ-VF15E	IC6	TC4S01F	IC	1	
					IC7	TC4W53F	IC	1	
• i E2	VEP20781B	SUB 1 P.C.BOARD	1	(RTL)AJ-VF15P	IC9	UPC358G2-E2	IC	1	
• i E2	VEP20781D	SUB 1 P.C.BOARD	1	(RTL)AJ-VF15E	IC10	TC4S69F	IC	1	
					IC12	LM4041E1M3	IC	1	
• i E3	VEP20782B	SUB 2 P.C.BOARD	1	(RTL)	L1	VLQ0891	COIL	1	
					L3	VLQ0891	COIL	1	
• i E4	VEP20783A	LED P.C.BOARD	1	(RTL)					
					Q1	2SC4081	TRANSISTOR	1	
					Q2	2SJ245S	TRANSISTOR	1	
					Q3	2SA1579	TRANSISTOR	1	
					Q4	2SB1132T100	TRANSISTOR	1	
					Q5,Q6	2SK1254L	TRANSISTOR	2	
					Q9-11	2SC4081	TRANSISTOR	3	
					Q15	2SC4081	TRANSISTOR	1	
					Q20	2SC4081	TRANSISTOR	1	
• i E1	VEP20780B	MAIN P.C.BOARD	1	(RTL)AJ-VF15P	Q21	2SA1576A	TRANSISTOR	1	
	VEP20780D	MAIN P.C.BOARD	1	(RTL)AJ-VF15E					
					R1	ERJ6GEYG22	M.RESISTOR CH 1/10W 22k	1	
C1	VCS1DQ106	E.CAPACITOR 20V 10M	1		R2	ERJ6GEYF33	M.RESISTOR CH 1/10W 33k	1	
C2	VCS1AQ226	E.CAPACITOR 10V 22M	1		R3	ERJ6GEYG10	M.RESISTOR CH 1/10W 10k	1	
C3	ECUM1H103K	C.CAPACITOR CH 50V 0.01	1		R4	ERJ6GEYG10	M.RESISTOR CH 1/10W 100	1	
C4	VCEV1EBL33	E.CAPACITOR CH 25V 330	1		R5	ERJ6GEYG33	M.RESISTOR CH 1/10W 3.3k	1	
C5	VCS1DQ106	E.CAPACITOR 20V 10M	1		R6	ERJ6GEYG33	M.RESISTOR CH 1/10W 33k	1	
C6	ECUM1C105Z	C.CAPACITOR CH 16V 1U	1		R7	ERJ6GEYG10	M.RESISTOR CH 1/10W 1k	1	
C7	VCS1DQ106	E.CAPACITOR 20V 10M	1		R9	ERJ6GEYG33	M.RESISTOR CH 1/10W 3.3k	1	
C8	ECUM1H391J	C.CAPACITOR CH 50V 390	1		R11	ERJ6GEYG33	M.RESISTOR CH 1/10W 33k	1	
C9	VCEA1CBG10	E.CAPACITOR CH 16V 100	1		R17,18	ERJ6GEYG10	M.RESISTOR CH 1/10W 1k	2	
C13	ECUM1H103K	C.CAPACITOR CH 50V 0.01	1		R20,21	ERJ6GEYF47	M.RESISTOR CH 1/10W 4.7k	2	
C14	VCS1DQ335	E.CAPACITOR 20V 3.3M	1		R22-24	ERJ6GEYG10	M.RESISTOR CH 1/10W 1k	3	
C15	VCS1CQ107	E.CAPACITOR 16V 100M	1		R25-27	ERJ6GEY0R0	M.RESISTOR CH 1/10W 0	3	
C16	ECUM1H221J	C.CAPACITOR CH 50V 220	1		R28	ERJ6GEYJ47	M.RESISTOR CH 1/10W 47k	1	
C18	ECUM1H103K	C.CAPACITOR CH 50V 0.01	1		R29	ERJ6GEYG27	M.RESISTOR CH 1/10W 2.7k	1	
C19	ECUM1H470J	C.CAPACITOR CH 50V 47F	1		R30,31	ERJ6GEYG15	M.RESISTOR CH 1/10W 1.5k	2	
C20	ECUX1E104K	C.CAPACITOR CH 25V 0.1U	1		R32	ERJ6GEYG10	M.RESISTOR CH 1/10W 1k	1	
C21	ECUM1H473K	C.CAPACITOR CH 50V 0.047	1		R33-35	ERJ6GEYG10	M.RESISTOR CH 1/10W 100	3	
C24	VCF01AP822	P.CAPACITOR 10V 8200P	1		R36	ERJ6GEYG10	M.RESISTOR CH 1/10W 10k	1	
C26	ECUM1H472K	C.CAPACITOR CH 50V 4700	1		R37	ERJ6GEYG10	M.RESISTOR CH 1/10W 1k	1	
C27	VCS1DQ475	E.CAPACITOR 20V 4.7M	1		R38	ERJ6GEYG36	M.RESISTOR CH 1/10W 3.6k	1	
C28	VCK0302	C.CAPACITOR	1		R39	ERJ6GEYG10	M.RESISTOR CH 1/10W 1k	1	
C29	VCEV1HBH4R	E.CAPACITOR CH 50V 4.7U	1		R40	ERJ6GEYG13	M.RESISTOR CH 1/10W 13k	1	
C30	VCEA1JBK27U	E.CAPACITOR CH 63V 27U	1		R41	ERJ6GEYG15	M.RESISTOR CH 1/10W 1.5k	1	
C32	VCS1DQ106	E.CAPACITOR 20V 10M	1		R42	ERJ6GEYG33	M.RESISTOR CH 1/10W 3.3k	1	
					R43,44	ERJ6GEYG10	M.RESISTOR CH 1/10W 10k	2	
CN1	VJP3440A020	CONNECTOR (MALE)	1		R45	ERJ6GEYG56	M.RESISTOR CH 1/10W 5.6k	1	
CN2	VJP1603T	CONNECTOR (MALE)	1		R46	ERJ6GEYG10	M.RESISTOR CH 1/10W 10k	1	
CN3	VJP1942	CONNECTOR (MALE)	1		R48	ERJ6GEYF47	M.RESISTOR CH 1/10W 4.7k	1	
CN4	VJP1603T	CONNECTOR (MALE)	1		R50	ERJ6GEY0R0	M.RESISTOR CH 1/10W 0	1	
CN5	VJP4292	CONNECTOR (MALE)	1		R51	ERJ6GEYG10	M.RESISTOR CH 1/10W 100	1	
CN6	VJP1230T	CONNECTOR (MALE)	1		R52	ERJ6GEY0R0	M.RESISTOR CH 1/10W 0	1	
					R54	ERJ6GEYG22	M.RESISTOR CH 1/10W 22k	1	
CP1-P4	VJR1072	PIN	4		R55	ERJ6GEYG18	M.RESISTOR CH 1/10W 18k	1	
					R58	ERJ8GEYJ2R	M.RESISTOR CH 1/8W 2.2	1	
D1	SC80204	DIODE	1		R59	ERJ6GEY0R0	M.RESISTOR CH 1/10W 0	1	
D2,D3	DAP202U	DIODE	2		R60	ERJ6GEYG33	M.RESISTOR CH 1/10W 3.3k	1	
D4	1SS302	DIODE	1		R61,62	ERJ6GEYG22	M.RESISTOR CH 1/10W 22k	2	
D5	DAN202U-T10	DIODE	1		R63	ERJ6GEYG10	M.RESISTOR CH 1/10W 10k	1	
D6,D7	RLS245	DIODE	2		R65	ERJ6GEYG10	M.RESISTOR CH 1/10W 100	1	
D8	DAN202U-T10	DIODE	1		R66	ERJ6GEYG56	M.RESISTOR CH 1/10W 5.6k	1	
D9	ESJA57-04A	DIODE	1		R67	ERJ6GEYF47	M.RESISTOR CH 1/10W 4.7k	1	
D10	RLS245	DIODE	1		R68	ERJ6GEYG10	M.RESISTOR CH 1/10W 10k	1	
D13	RLS245	DIODE	1		R69	ERJ6GEYG10	M.RESISTOR CH 1/10W 1M	1	
					R70	ERJ6GEYG10	M.RESISTOR CH 1/10W 1k	1	
E1	VJR1072	PIN	1		R71	ERJ6GEYG10	M.RESISTOR CH 1/10W 100	1	
					R72-74	ERJ6GEYJ33	M.RESISTOR CH 1/10W 3.3k	3	
FBT	VLT0950	FLYBACK TRANSFORMER	1		R75	ERJ6GEYG10	M.RESISTOR CH 1/10W 100	1	
					R76	ERJ6GEYG22	M.RESISTOR CH 1/10W 22k	1	
HLC	VLQ0889	HORIZON LINEAR COIL	1		R77	ERJ6GEYG68	M.RESISTOR CH 1/10W 68	1	
					R78	ERJ6GEYG10	M.RESISTOR CH 1/10W 100	1	
IC	TC74HC164AF	IC	1		R80	ERJ6GEYG33	M.RESISTOR CH 1/10W 3.3k	1	
IC2	TC74HC08AF	IC	1		R81	ERJ6GEY0R0	M.RESISTOR CH 1/10W 0	1	
IC3	TC7W04F	IC	1		R101	ERJ6GEY0R0	M.RESISTOR CH 1/10W 0	1	
IC4	M66311FP	IC	1		R104,05	ERJ6GEYG10	M.RESISTOR CH 1/10W 10k	2	

AJ-VF15P/E

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
R110	VRE0218	M.RESISTOR	1	
R111	ERJ6GEYG10	M.RESISTOR CH 1/10W 100	1	
RV1	VRV0303B102	V.RESISTOR 1K	1	
RV3	VRV0303B502	V.RESISTOR 5K	1	
RV5	VRV0303B103	V.RESISTOR 10K	1	
RV6	VRV0303B502	V.RESISTOR 5K	1	
RV7	VRV0303B101	V.RESISTOR 100	1	
S2	VST0332	TOGGLE SWITCH	1	
S3	VST0333	TOGGLE SWITCH	1	
		MISCELLANEOUS		
	VSC4926	SHIELD CASE	1	
* E2	VEP20781B	SUB 1 P.C.BOARD	1	(RTL)AJ-VF15P
	VEP20781D	SUB 1 P.C.BOARD	1	(RTL)AJ-VF15E
C1	VCS1VQ105	E.CAPACITOR 35V 1M	1	
C2-C4	VCS1DQ106	E.CAPACITOR 20V 10M	3	
C5,C6	ECUX1E104K	C.CAPACITOR CH 25V 0.1U	2	
C7,C8	VCS1DQ106	E.CAPACITOR 20V 10M	2	
C9	VCS1VQ105	E.CAPACITOR 35V 1M	1	
C10	ECUX1H682K	C.CAPACITOR CH 50V 6800	1	
C12	ECHU1C472J	P.CAPACITOR 16V 4700P	1	
C13	ECUM1E223K	C.CAPACITOR CH 25V 0.023	1	
C14,15	ECUX1E104K	C.CAPACITOR CH 25V 0.1U	2	
C16,17	VCS1VQ105	E.CAPACITOR 35V 1M	2	
C19	ECUM1H472K	C.CAPACITOR CH 50V 4700	1	
C20	VCEV1CBJ10	E.CAPACITOR 16V 100U	1	
C21	ECUM1H221J	C.CAPACITOR CH 50V 220P	1	
C22	ECUM1H153K	C.CAPACITOR CH 50V 0.015	1	
C23	VCS1DQ335	E.CAPACITOR 20V 3.3M	1	
C24	ECUX1E104K	C.CAPACITOR CH 25V 0.1U	1	
C25	VCS1DQ106	E.CAPACITOR 20V 10M	1	
C26	ECUM1H562K	C.CAPACITOR CH 50V 5600	1	
C27	VCEV1CBL47	E.CAPACITOR 16V 470U	1	
C28	ECUX1E104K	C.CAPACITOR CH 25V 0.1U	1	
CN21	VJP1614	CONNECTOR (MALE)	1	
CN22	VJP1843	CONNECTOR (MALE)	1	
CP3	VJR1072	TEST POINT	1	
D1	CL-200HRC	LED	1	
D2	DAN202U-T10	DIODE	1	
D3	1SS302	DIODE	1	
IC1	HA11423MP	IC	1	
Q1,Q2	2SC4081	TRANSISTOR	2	
Q3	IMZ1	TRANSISTOR-RESISTOR	1	
Q4	2SK664	TRANSISTOR	1	
R1	ERJ6GEYG22	M.RESISTOR CH 1/10W 2.2K	1	
R2	ERJ6GEYG47	M.RESISTOR CH 1/10W 470	1	
R3	ERJ6GEYG10	M.RESISTOR CH 1/10W 1K	1	
R4	ERJ6GEYF12	M.RESISTOR CH 1/10W 12K	1	
R5	ERJ6GEYG27	M.RESISTOR CH 1/10W 27K	1	
R6	ERJ6GEYG10	M.RESISTOR CH 1/10W 10K	1	
R7	ERJ6GEYF82	M.RESISTOR CH 1/10W 8.2K	1	
R8	ERJ6GEYG10	M.RESISTOR CH 1/10W 10K	1	
R9	ERJ6GEYG22	M.RESISTOR CH 1/10W 22K	1	
R10	ERJ6GEYG12	M.RESISTOR CH 1/10W 12K	1	
R11	ERJ6GEYG10	M.RESISTOR CH 1/10W 10K	1	
R12	ERJ6GEYG68	M.RESISTOR CH 1/10W 68K	1	
R13	ERJ6GEYF12	M.RESISTOR CH 1/10W 12K	1	
R14	ERJ6GEYF82	M.RESISTOR CH 1/10W 8.2K	1	
R15	ERJ6GEYF33	M.RESISTOR CH 1/10W 33K	1	
R16	ERJ6GEYG22	M.RESISTOR CH 1/10W 2.2K	1	

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
R17	ERJ6GEYF47	M.RESISTOR CH 1/10W 47K	1	
R18	ERJ6GEYJ22	M.RESISTOR CH 1/10W 220K	1	
R19	ERJ6GEYG56	M.RESISTOR CH 1/10W 5.6K	1	
R20	ERJ6GEYG10	M.RESISTOR CH 1/10W 10K	1	
R21	ERJ6GEYG68	M.RESISTOR CH 1/10W 6.8K	1	
R22	ERJ6GEYG30	M.RESISTOR CH 1/10W 30K	1	
R23	ERJ6GEYG10	M.RESISTOR CH 1/10W 10K	1	
R24	ERJ6GEYJ15	M.RESISTOR CH 1/10W 15K	1	
R25	ERJ6GEYG33	M.RESISTOR CH 1/10W 3.3K	1	
R26	ERJ6GEYF47	M.RESISTOR CH 1/10W 4.7K	1	
R27	ERJ6GEYJ4R	M.RESISTOR CH 1/10W 4.7K	1	
R28	ERJ6GEYF33	M.RESISTOR CH 1/10W 33K	1	
R29	ERJ6GEYF47	M.RESISTOR CH 1/10W 47K	1	
R30	ERJ6GEYG10	M.RESISTOR CH 1/10W 100K	1	
R31	ERJ6GEYF56	M.RESISTOR CH 1/10W 56K	1	
R32	ERJ6GEYJ47	M.RESISTOR CH 1/10W 470K	1	
R33	ERJ6GEYJ10	M.RESISTOR CH 1/10W 10K	1	
R34	ERJ6GEYJ47	M.RESISTOR CH 1/10W 470K	1	
R35	ERJ6GEYF47	M.RESISTOR CH 1/10W 47K	1	
R36	ERJ6GEYF33	M.RESISTOR CH 1/10W 33K	1	
RV1,V2	EVML1GA00B	V.RESISTOR 5K	2	
RV3-V5	EVML1GA00B	V.RESISTOR 500	3	
		MISCELLANEOUS		
	VMP6012	P.C.BOARD STAY	1	
	XSB2+4FC	SCREW	2	
* E3	VEP20782B	SUB 2 P.C.BOARD	1	(RTL)
C1,C2	VCS1DQ106	E.CAPACITOR 20V 10M	2	
C3	VCS1AQ226	E.CAPACITOR 10V 22M	1	
C4	ECUM1H330J	C.CAPACITOR CH 50V 33F	1	
C5	VCS1DQ106	E.CAPACITOR 20V 10M	1	
C6	ECUM1H330J	C.CAPACITOR CH 50V 33F	1	
C7	VCS1DQ475	E.CAPACITOR 20V 4.7M	1	
C8	ECUM1C105Z	C.CAPACITOR CH 16V 1U	1	
C9,10	ECUM1H101J	C.CAPACITOR CH 50V 100F	2	
C11	VCS1DQ475	E.CAPACITOR 20V 4.7M	1	
C12	VCS1DQ106	E.CAPACITOR 20V 10M	1	
C13	ECUM1H103K	C.CAPACITOR CH 50V 0.01U	1	
C14,15	ECUM1C105Z	C.CAPACITOR CH 16V 1U	2	
CN31	VJP1943	CONNECTOR (MALE)	1	
D1,D2	CL200HR-CTU	DIODE	2	
D3	1SS302	DIODE	1	
D4	HZK4ALL	DIODE	1	
D5	1SS302	DIODE	1	
D6	HZK9CL	DIODE	1	
DL1	VLD0413	DELAY	1	
IC1	TC4W66F	IC	1	
IC2	UPC358G2-E2	IC	1	
IC3	TC4W53F	IC	1	
L1	VLQ0892	COIL	1	
Q1,Q2	2SC4081	TRANSISTOR	2	
Q3-Q7	2SC4178T1F1	TRANSISTOR	5	
Q8-10	2SC4102	TRANSISTOR	3	
Q11	2SA1579-T106	TRANSISTOR	1	
R1	ERJ6GEY0R0	M.RESISTOR CH 1/10W 0	1	
R2	ERJ6GEYG10	M.RESISTOR CH 1/10W 10K	1	
R3	ERJ6GEYG10	M.RESISTOR CH 1/10W 1K	1	
R4	ERJ6GEYG27	M.RESISTOR CH 1/10W 27K	1	
R5	ERJ6GEYG22	M.RESISTOR CH 1/10W 22K	1	

AJ-VF15P/E

[illegible]

AJ-VF15P/VF20WP

[illegible]

AJ-VF20WP/E

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks	Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
• i E1	VEP20780B	MAIN P.C.BOARD	1	(RTL)AJ-VF20WP	IC4	M66311FP	IC	1	
	VEP20780C	MAIN P.C.BOARD	1	(RTL)AJ-VF20WE	IC5	TL1453CNS	IC	1	
• i E2	VEP20781A	SUB 1 P.C.BOARD	1	(RTL)AJ-VF20WP	IC6	TC4S01F	IC	1	
	VEP20781C	SUB 1 P.C.BOARD	1	(RTL)AJ-VF20WE	IC7,C8	TC4W53F	IC	2	
• i E3	VEP20782A	SUB 2 P.C.BOARD	1	(RTL)	IC9	UPC358G2-E2	IC	1	
• i E4	VEP20783A	LED P.C.BOARD	1	(RTL)	IC10,11	TC4S69F	IC	2	
					IC12	LM4041E1M3	IC	1	
					L1	VLQ0891	COIL	1	
					L2	VLQ0890	COIL	1	
					L3	VLQ0891	COIL	1	
					Q1	2SC4081	TRANSISTOR	1	
					Q2	2SJ245S	TRANSISTOR	1	
					Q3	2SA1579	TRANSISTOR	1	
					Q4	2SB1132T100	TRANSISTOR	1	
					Q5-Q8	2SK1254L	TRANSISTOR	4	
					Q9-11	2SC4081	TRANSISTOR	3	
• i E1	VEP20780B	MAIN P.C.BOARD	1	(RTL)AJ-VF20WP	Q15	2SC4081	TRANSISTOR	1	
	VEP20780C	MAIN P.C.BOARD	1	(RTL)AJ-VF20WE	Q20	2SC4081	TRANSISTOR	1	
					Q21	2SA1576A	TRANSISTOR	1	
C1	VCS1DQ106	E.CAPACITOR 20V 10M	1		R1	ERJ6GEYG22	M.RESISTOR CH 1/10W 22K	1	
C2	VCS1AQ226	E.CAPACITOR 10V 22M	1		R2	ERJ6GEYF33	M.RESISTOR CH 1/10W 33K	1	
C3	ECUM1H103K	C.CAPACITOR CH 50V 0.01	1		R3	ERJ6GEYG10	M.RESISTOR CH 1/10W 10K	1	
C4	VCEV1EBL33	E.CAPACITOR CH 25V 330	1		R4	ERJ6GEYG10	M.RESISTOR CH 1/10W 100	1	
C5	VCS1DQ106	E.CAPACITOR 20V 10M	1		R5	ERJ6GEYG33	M.RESISTOR CH 1/10W 3.3K	1	
C6	ECUM1C105Z	C.CAPACITOR CH 16V 1U	1		R6	ERJ6GEYG33	M.RESISTOR CH 1/10W 33K	1	
C7	VCS1DQ106	E.CAPACITOR 20V 10M	1		R7	ERJ6GEYG10	M.RESISTOR CH 1/10W 1K	1	
C8	ECUM1H391J	C.CAPACITOR CH 50V 390	1		R9	ERJ6GEYG33	M.RESISTOR CH 1/10W 3.3K	1	
C9	VCEA1CBG10	E.CAPACITOR CH 16V 100	1		R11	ERJ6GEYG33	M.RESISTOR CH 1/10W 33K	1	
C13	ECUM1H103K	C.CAPACITOR CH 50V 0.01	1		R17,18	ERJ6GEYG10	M.RESISTOR CH 1/10W 1K	2	
C14	VCS1DQ335	E.CAPACITOR 20V 3.3M	1		R20,21	ERJ6GEYF47	M.RESISTOR CH 1/10W 4.7K	2	
C15	VCS1CQ107	E.CAPACITOR 16V 100M	1		R22-24	ERJ6GEYG10	M.RESISTOR CH 1/10W 1K	3	
C16	ECUM1H221J	C.CAPACITOR CH 50V 220	1		R25-27	ERJ6GEY0R0	M.RESISTOR CH 1/10W 0	3	
C18	ECUM1H103K	C.CAPACITOR CH 50V 0.01	1		R28	ERJ6GEYJ47	M.RESISTOR CH 1/10W 47K	1	
C19	ECUM1H470J	C.CAPACITOR CH 50V 47F	1		R29	ERJ6GEYG27	M.RESISTOR CH 1/10W 2.7K	1	
C20,21	ECUX1E104K	C.CAPACITOR CH 25V 0.1U	2		R30,31	ERJ6GEYG15	M.RESISTOR CH 1/10W 1.5K	2	
C24	VCF01AP103	P.CAPACITOR 10V 0.01U	1		R32	ERJ6GEYG10	M.RESISTOR CH 1/10W 1K	1	
C25	VCF01AP562	P.CAPACITOR 10V 5600P	1		R33-35	ERJ6GEYG10	M.RESISTOR CH 1/10W 100	3	
C26	ECUM1H472K	C.CAPACITOR CH 50V 4700	1		R36	ERJ6GEYG10	M.RESISTOR CH 1/10W 10K	1	
C27	VCS1DQ475	E.CAPACITOR 20V 4.7M	1		R37	ERJ6GEYG10	M.RESISTOR CH 1/10W 1K	1	
C28	VCK0302	C.CAPACITOR	1		R38	ERJ6GEYG36	M.RESISTOR CH 1/10W 3.6K	1	
C29	VCEV1HBH4R	E.CAPACITOR CH 50V 4.7U	1		R39	ERJ6GEYG10	M.RESISTOR CH 1/10W 1K	1	
C30	VCEA1JBK27	E.CAPACITOR CH 63V 27U	1		R40	ERJ6GEYG13	M.RESISTOR CH 1/10W 13K	1	
C31	VCS1DQ476	E.CAPACITOR 20V 47M	1		R41	ERJ6GEYG15	M.RESISTOR CH 1/10W 1.5K	1	
C32	VCS1DQ106	E.CAPACITOR 20V 10M	1		R42	ERJ6GEYG33	M.RESISTOR CH 1/10W 3.3K	1	
C41	ECUM1H104Z	E.CAPACITOR 16V 0.1U	1	AJ-VF20WE	R43,44	ERJ6GEYG10	M.RESISTOR CH 1/10W 10K	2	
CN1	VJP3440A020	CONNECTOR (MALE)	1		R45	ERJ6GEYG56	M.RESISTOR CH 1/10W 5.6K	1	
CN2	VJP1603T	CONNECTOR (MALE)	1		R46	ERJ6GEYG10	M.RESISTOR CH 1/10W 10K	1	
CN3	VJP1942	CONNECTOR (MALE)	1		R48	ERJ6GEYF47	M.RESISTOR CH 1/10W 4.7K	1	
CN4	VJP1603T	CONNECTOR (MALE)	1		R49	ERJ6GEY0R0	M.RESISTOR CH 1/10W 0	1	
CN5	VJP4292	CONNECTOR (MALE)	1		R51	ERJ6GEYG10	M.RESISTOR CH 1/10W 100	1	
CN6	VJP1230T	CONNECTOR (MALE)	1		R52	ERJ6GEY0R0	M.RESISTOR CH 1/10W 0	1	
CP1-P4	VJR1072	PIN	4		R54	ERJ6GEYG22	M.RESISTOR CH 1/10W 22K	1	
D1	SC80204	DIODE	1		R55	ERJ6GEYG18	M.RESISTOR CH 1/10W 18K	1	
D2,D3	DAP202U	DIODE	2		R56	ERJ6GEYF33	M.RESISTOR CH 1/10W 33K	1	
D4	1SS302	DIODE	1		R57	ERJ6GEYG18	M.RESISTOR CH 1/10W 18K	1	
D5	DAN202U-T10	DIODE	1		R58	ERJ8GEYJ1R	M.RESISTOR CH 1/8W 1.2	1	
D6,D7	RLS245	DIODE	2		R60	ERJ6GEYG33	M.RESISTOR CH 1/10W 3.3K	1	
D8	DAN202U-T10	DIODE	1		R61,62	ERJ6GEYG22	M.RESISTOR CH 1/10W 22K	2	
D9	ESJA57-04A	DIODE	1		R63	ERJ6GEYG10	M.RESISTOR CH 1/10W 10K	1	
D10	RLS245	DIODE	1		R65	ERJ6GEYG10	M.RESISTOR CH 1/10W 100	1	
D13	RLS245	DIODE	1		R66	ERJ6GEYG56	M.RESISTOR CH 1/10W 5.6K	1	
E1	VJR1072	PIN	1		R67	ERJ6GEYF47	M.RESISTOR CH 1/10W 4.7K	1	
FBT	VLT0949	FLYBACK TRANSFORMER	1		R68	ERJ6GEYG10	M.RESISTOR CH 1/10W 10K	1	
HLC	VLQ0889	HORIZON LINEAR COIL	1		R69	ERJ6GEYG10	M.RESISTOR CH 1/10W 1M	1	
IC	TC74HC164AF	IC	1		R70	ERJ6GEYG10	M.RESISTOR CH 1/10W 1K	1	
IC2	TC74HC08AF	IC	1		R71	ERJ6GEYG10	M.RESISTOR CH 1/10W 10K	1	
IC3	TC7W04F	IC	1		R72-74	ERJ6GEYJ33	M.RESISTOR CH 1/10W 3.3K	3	
					R75	ERJ6GEYG10	M.RESISTOR CH 1/10W 100	1	
					R76	ERJ6GEYG22	M.RESISTOR CH 1/10W 22K	1	
					R77	ERJ6GEYG68	M.RESISTOR CH 1/10W 68	1	
					R78	ERJ6GEYG10	M.RESISTOR CH 1/10W 10K	1	
					R80	ERJ6GEYG10	M.RESISTOR CH 1/10W 1K	1	

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Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
R81	ERJ6GEYJ5R0	M.RESISTOR CH 1/10W 5.6K	1	
R101	ERJ6GEY0R0	M.RESISTOR CH 1/10W 0 1	1	
R104,05	ERJ6GEYG10M	M.RESISTOR CH 1/10W 10M	2	
R110	VRE0218	M.RESISTOR	1	
R111	ERJ6GEYG10M	M.RESISTOR CH 1/10W 10M	1	
RV1	VRV0303B102	V.RESISTOR 1K	1	
RV3,V4	VRV0303B502	V.RESISTOR 5K	2	
RV5	VRV0303B103	V.RESISTOR 10K	1	
RV6	VRV0303B502	V.RESISTOR 5K	1	
RV7,V8	VRV0303B101	V.RESISTOR 100	2	
S2	VST0332	TOGGLE SWITCH	1	
S3	VST0333	TOGGLE SWITCH	1	
		MISCELLANEOUS		
	VSC4926	SHIELD CASE	1	
• i E2	VEP20781A	SUB 1 P.C.BOARD	1	(RTL)AJ-VF20WWP
	VEP20781C	SUB 1 P.C.BOARD	1	(RTL)AJ-VF20WE
C1	VCS1VQ105	E.CAPACITOR 35V 1M	1	
C2-C4	VCS1DQ106	E.CAPACITOR 20V 10M	3	
C5,C6	ECUX1E104K	C.CAPACITOR CH 25V 0.1U	2	
C7,C8	VCS1DQ106	E.CAPACITOR 20V 10M	2	
C9	VCS1VQ105	E.CAPACITOR 35V 1M	1	
C10	ECUX1H682K	C.CAPACITOR CH 50V 6800	1	
C12	ECHU1C472J	P.CAPACITOR 16V 4700P	1	
C13	ECUM1E223K	C.CAPACITOR CH 25V 0.023	1	
C14,15	ECUX1E104K	C.CAPACITOR CH 25V 0.1U	2	
C16,17	VCS1VQ105	E.CAPACITOR 35V 1M	2	
C19	ECUM1H472K	C.CAPACITOR CH 50V 4700	1	
C20	VCEV1CBJ10	E.CAPACITOR 16V 100U	1	
C21	ECUM1H221J	C.CAPACITOR CH 50V 2201	1	
C22	ECUM1H153K	C.CAPACITOR CH 50V 0.015	1	
C23	VCS1DQ335	E.CAPACITOR 20V 3.3M	1	
C24	ECUX1E104K	C.CAPACITOR CH 25V 0.1U	1	
C25	VCS1DQ106	E.CAPACITOR 20V 10M	1	
C26	ECUM1H562K	C.CAPACITOR CH 50V 5600	1	
C27	VCEV1CBL47	E.CAPACITOR 16V 470U	1	
CN21	VJP1614	CONNECTOR (MALE)	1	
CN22	VJP1843	CONNECTOR (MALE)	1	
CP3	VJR1072	TEST POINT	1	
D1	CL-200HRCTU	LED	1	
D2	DAN202U-T10	DIODE	1	
D3	1SS302	DIODE	1	
IC1	HA11423MP	IC	1	
Q1,Q2	2SC4081	TRANSISTOR	2	
Q3	IMZ1	TRANSISTOR-RESISTOR	1	
R1	ERJ6GEYG22M	M.RESISTOR CH 1/10W 2.2K	1	
R2	ERJ6GEYG47M	M.RESISTOR CH 1/10W 470	1	
R3	ERJ6GEYG10M	M.RESISTOR CH 1/10W 1K	1	
R4	ERJ6GEYF12M	M.RESISTOR CH 1/10W 12M	1	
R5	ERJ6GEYG27M	M.RESISTOR CH 1/10W 27M	1	
R6	ERJ6GEYG10M	M.RESISTOR CH 1/10W 10M	1	
R7	ERJ6GEYF82M	M.RESISTOR CH 1/10W 8.2M	1	
R8	ERJ6GEYG10M	M.RESISTOR CH 1/10W 10M	1	
R9	ERJ6GEYG22M	M.RESISTOR CH 1/10W 22M	1	
R10	ERJ6GEYG12M	M.RESISTOR CH 1/10W 12M	1	
R11	ERJ6GEYG10M	M.RESISTOR CH 1/10W 10M	1	
R12	ERJ6GEYG68M	M.RESISTOR CH 1/10W 68M	1	
R13	ERJ6GEYF12M	M.RESISTOR CH 1/10W 12M	1	
R14	ERJ6GEYF82M	M.RESISTOR CH 1/10W 8.2M	1	
R15	ERJ6GEYF33M	M.RESISTOR CH 1/10W 33M	1	

Ref.No.	Part No.	Part Name & Description	Qty	Remarks
R16	ERJ6GEYG22	M.RESISTOR CH 1/10W 2.2K	1	
R17	ERJ6GEYF47	M.RESISTOR CH 1/10W 47K	1	
R18	ERJ6GEYJ22	M.RESISTOR CH 1/10W 22K	1	
R19	ERJ6GEYG56	M.RESISTOR CH 1/10W 5.6K	1	
R20	ERJ6GEYG10	M.RESISTOR CH 1/10W 10K	1	
R21	ERJ6GEYG68	M.RESISTOR CH 1/10W 6.8K	1	
R22	ERJ6GEYG10	M.RESISTOR CH 1/10W 1K	1	
R23	ERJ6GEY0R0	M.RESISTOR CH 1/10W 0	1	
R24	ERJ6GEYJ15	M.RESISTOR CH 1/10W 15K	1	
R25	ERJ6GEYG33	M.RESISTOR CH 1/10W 3.3K	1	
R26	ERJ6GEYF47	M.RESISTOR CH 1/10W 4.7K	1	
R27	ERJ6GEYJ4R	M.RESISTOR CH 1/10W 4.7K	1	
R28	ERJ6GEYF33	M.RESISTOR CH 1/10W 33K	1	
R29	ERJ6GEYF47	M.RESISTOR CH 1/10W 47K	1	
R30	ERJ6GEYG10	M.RESISTOR CH 1/10W 10K	1	
R31	ERJ6GEYF56	M.RESISTOR CH 1/10W 56K	1	
R32	ERJ6GEYJ47	M.RESISTOR CH 1/10W 47K	1	
R33	ERJ6GEYJ10	M.RESISTOR CH 1/10W 10K	1	
RV1,V2	EVML1GA00B	V.RESISTOR 5K	2	
RV3,V4	EVML1GA00B	V.RESISTOR 500	2	
		MISCELLANEOUS		
	VMP6012	P.C.BOARD STAY	1	
	XSB2+4FC	SCREW	2	
* E3	VEP20782A	SUB 2 P.C.BOARD	1	(RTL)
C1,C2	VCS1DQ106	E.CAPACITOR 20V 10M	2	
C3	VCS1AQ226	E.CAPACITOR 10V 22M	1	
C4	ECUM1H330J	C.CAPACITOR CH 50V 33P	1	
C5	VCS1DQ106	E.CAPACITOR 20V 10M	1	
C6	ECUM1H330J	C.CAPACITOR CH 50V 33P	1	
C7	VCS1DQ475	E.CAPACITOR 20V 4.7M	1	
C8	ECUM1C105Z	C.CAPACITOR CH 16V 1U	1	
C9,10	ECUM1H101J	C.CAPACITOR CH 50V 100P	2	
C11	VCS1DQ475	E.CAPACITOR 20V 4.7M	1	
C12	VCS1DQ106	E.CAPACITOR 20V 10M	1	
C13	ECUM1H103K	C.CAPACITOR CH 50V 0.01U	1	
C14,15	ECUM1C105Z	C.CAPACITOR CH 16V 1U	2	
CN31	VJP1943	CONNECTOR (MALE)	1	
D1,D2	CL200HR-CTU	DIODE	2	
D3	1SS302	DIODE	1	
D4	HZK4ALL	DIODE	1	
D5	1SS302	DIODE	1	
D6	HZK9CL	DIODE	1	
DL1	VLD0413	DELAY	1	
IC1	TC4W66F	IC	1	
IC2	UPC358G2-E2	IC	1	
IC3	TC4W53F	IC	1	
L1	VLQ0892	COIL	1	
Q1,Q2	2SC4081	TRANSISTOR	2	
Q3-Q7	2SC417-F14	TRANSISTOR	5	
Q8-10	2SC4102	TRANSISTOR	3	
Q11	2SA1579-T106	TRANSISTOR	1	
Q12	2SK664	TRANSISTOR	1	
R1	ERJ6GEY0R0	M.RESISTOR CH 1/10W 0	1	
R2	ERJ6GEYG10	M.RESISTOR CH 1/10W 10K	1	
R3	ERJ6GEYG10	M.RESISTOR CH 1/10W 1K	1	
R4	ERJ6GEYG27	M.RESISTOR CH 1/10W 27K	1	
R5	ERJ6GEYG22	M.RESISTOR CH 1/10W 22K	1	
R6	ERJ6GEYG10	M.RESISTOR CH 1/10W 10K	1	

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